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Philadelphia Ice Boat.

According to the *U. S. Gazette*, Philadelphia must possess the most valuable ice boat on this broad continent. It has undergone a complete renovation, and its trial trip is thus described by our cotemporary :—

"Yesterday morning the City Ice Boat started on an excursion trip down the river, on the double errand of breaking up the ice and taking a large number of the members of City Council to see the working of the boat; several sea captains were of the company. When the boat arrived at the Horse Shoe, the steamers *City of Boston*, for Boston, and *Virginia*, for Richmond, were encountered fast in the ice, which was piled up to the hight of five feet. The steamers were towed out by the Ice Boat, during which she broke a six-inch hawser.

The boat has been materially improved, and her capacities much increased. She has new boilers and new cylinders, the latter 40 inches in diameter, with a stroke of 7 feet, giving 1100-horse power.

The former boilers were set in brick-work, and a pressure of 150 pounds to the square inch was required to produce the same amount of power as is now produced by a pressure of 60 pounds to the square inch. The present engines make 27 revolutions per minute, under the same circumstances in which the old engines would make but 22. The boat is in perfect order; and a competent engineer who was on board states that it is now capable of doing as much work in one day as it was in a week last winter. It is confidently anticipated that the boat can tow two ships of 1000 tuns each, at a rate of ten miles per hour, in the present state of the river.

The boat was built nineteen years ago, since which time the increase of vessels arriving at this port, computed by number, is is about 450 per cent. The average period of service of the boat, since she was built, has been fifty-five days each winter."

The Blue Ridge of Virginia Tunneled.

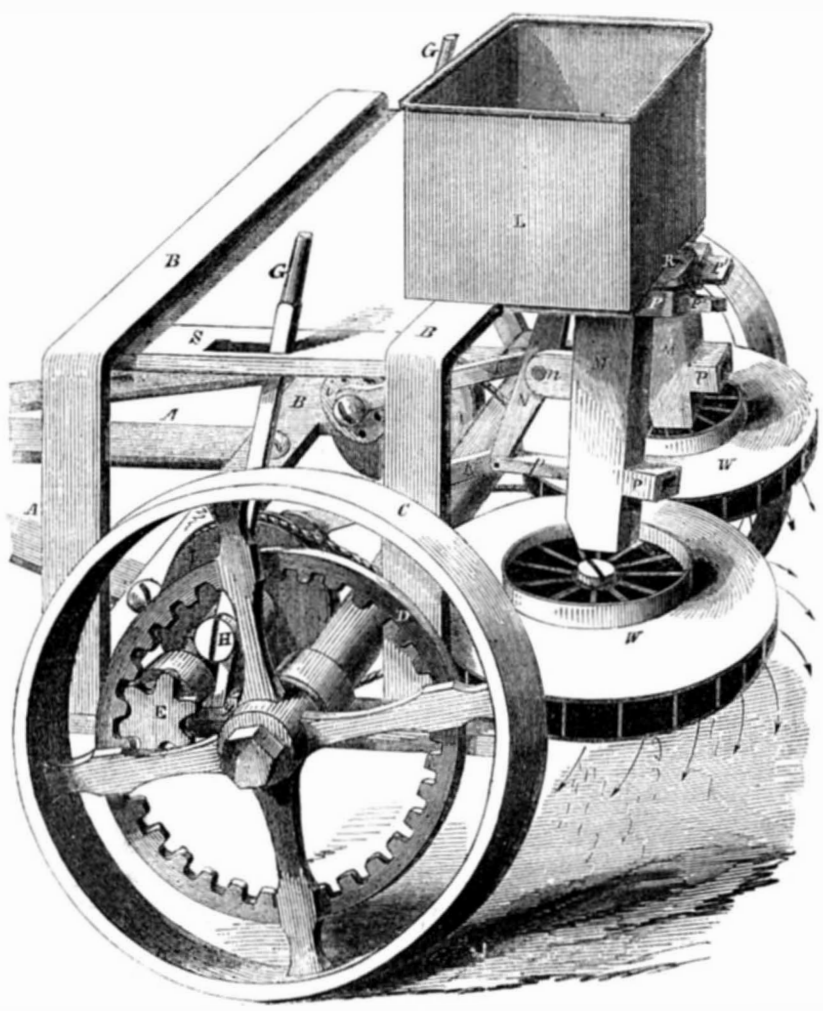
The Blue Ridge Tunnel was finally carried through the mountain three weeks ago. The augers appeared from either side, not more than half an inch apart, and the perforation was complete. The Staunton *Spectator* says

"So accurately has been all the calculations made by Col. Crozel, that the auger holes from both ends of the tunnel were only half an inch distant from each other, when they met, and the difference in the length of the tunnel, as compared by measurement on the outside, over the top of the mountain, and as accurately measured inside, after the perforation, was less than six inches. The draft at the perforation is strong enough to extinguish a light on the eastern side."

A Dear Egg.

At a recent sale in London, of the late Mr. Yarrell's specimens of natural history, the most remarkable purchase was that of an egg for $100—the egg of the Great Auk, a bird of the diver tribe, included in the British Fauna, but long since extinct.

IMPROVED BROADCAST SEED SOWER.



The accompanying figure is a perspective view of a machine for sowing seed broadcast. The seed is sown by centrifugal force, being received from a hopper into the center of two revolving wheels—like horizontal water wheels—and the seed is thrown out at the periphery in a circular shower through channels, thus distributing it perfectly. In the hollow spouts conveying the seed from the hopper to the sowing wheels, there are slide valves with ports in them, which are adjustable to cut off at different lengths of stroke, and thus regulate the exact quantity of seed sown.

A A are the angle bars, to which the pole of the carriage part is attached. B B is the framing. C is the driving wheel, with an inside cog rim wheel, D. The two wheels of the cart are exactly alike—duplicates of one another. There are two sowing wheels, and two conducting seed spouts exactly alike. A description of the one will convey an exact idea of the construction and operations of the other. The wheel, C, like that of a common cart, turns *on* its axle. E is a small pinion, secured to the end of a small shaft, F, which is supported in a bearing on the frame at its inner end; at its nigh end in a sliding bearing secured to the foot, *g*, of the lever, G. This lever has its fulcrum pin, H, passing into a small arm supported on the frame.

On the small shaft, F, there is a band pulley, I, over which passes a cord, which is twisted, and then passes around a horizontal pulley on the shaft of, and under the sowing wheel, W, and rotates it when the pinion, E, is in gear with the cog wheel, D. On the inner end of the small shaft, F, is an eccentric, *i*, to which the connecting rod, K, is secured, which operates the valves in the hopper trunk, M, to regulate the quantity and distribution of the seed.

L is the hopper containing the seed; the spout, M, conducts the seed to the open center of the wheel, W. There are two slide valves in this spout, connected at their inner ends to the upper and lower ends of an arm, N, which vibrates on a pin, *n*, secured to a projection on the frame. The two slide valves in the spout move in the valve boxes, P P', and their stroke is in unison, but in opposite directions. The nigh valve rod, *p*, is drawn in while the upper valve is thrust in the other direction; this is caused by the vibrating arm, N, operated by the crank rod, K, as the small shaft, F, revolves. The eccentric, *i*, is made with holes, for the crank pin to alter the throw of the eccentric, and change the stroke of the valves. R is a slide on the bottom of the hopper, L, to close its opening, and to regulate its area.

The figure shows the machine in operation. The pinion, E, is in gear with wheel D, as the cart is drawn forward, and the lever, G, is held firm in its catch in the plate, S. The pulley, I, by its cord, rotates the seed wheel, W. The grain passes down through spout M, from hopper L, through the ports of valves P P', being admitted through one and cut off by the other, alternately, by the vibrating arm, N, which is operated by the crank rods, K. The seed falls into the wheel, W, at its center, and by centrifugal action is thrown from the center to the circumference through the channels of the wheel, sowing the seed in a perfect circle, and sowing evenly over a certain area as the machine is drawn forward. The sowing wheels are supported on center studs or shafts, which have their steps on a transverse brace underneath the frame.

The two slide valves in the spout, M,—the one cutting off and the other opening alternately—measure the quantity of seed to be discharged at every revolution of the wheels, thus regulating the amount to be sown per acre.

A patent was issued for this broadcast sower to Curtis O. Luce, on the 10th of June last. A working machine sows a breadth of 32 feet of wheat or rye as fast as horses can walk with it; it sows a breadth of from 18 to 25 feet of lighter seeds, such as grass and clover. It is adapted for one or two horses, and will sow plaster, guano, &c., as well as seed. The price of a machine is from $60 to $70.

Ten years ago, complaint was made that agricultural inventions did not keep pace with those relating to manufactures; to this we directed the attention of our inventors, and with the most happy results. Machines for abridging the labor of our farmers have greatly increased in number and efficiency during the past few years, and many of the most useful improvements have come from requests and suggestions made in our columns respecting such and such machines being wanted; this was the case with regard to broadcast seed sowers. It affords us much pleasure in introducing to public attention all improvements in machines for abridging labor, and thus benefitting *all* classes.

When the patent for the above seed sower was issued, Mr. Luce was living in Illinois; he is now residing at Brandon, Vt., to which place letters addressed to him, desiring more information, will meet with attention.

Thrilling Incident in the Life of an Inventor.

Æolian Pianos.—A correspondent in the *National Intelligencer*, (D. C.) notices the efforts that were made some years ago by O. M. Coleman, the inventor of the Æolian Attachment, to direct attention to it, among the musical circles of London, and concludes with the following anecdote :—

"But to bring my letter to a close. After Coleman had obtained his European patents, and his invention had attained the highest point in the estimation of the public, he still found a 'lion in the way.' The celebrated Thalberg, then and yet justly regarded as the first pianist in the world, who was then on the Continent, had not yet seen or heard the instrument. Many eminent musicians, and especially the piano manufacturers, stood aloof until Thalberg should give his opinion. Coleman felt that the fate of his invention hung upon the fiat of the dreaded Thalberg. It was—'Wait till Thalberg comes,' and 'If Thalberg says so and so, then,' &c., until the very name of Thalberg became hateful. The great master arrived in London at last, and a day was appointed for his examination of the instrument. A large room was selected, into which were admitted a number of the first musical artists.

Benedict sat down and played in his best style. Thalberg stood at a distance, with his arms folded and back turned. He listened for a time in that position, and then turned his face towards the instrument. He moved softly across the floor until he stood by the side of Benedict, where he again stopped and listened. An occasional nod of the head was all the emotion he betrayed. Suddenly, while Benedict was in the very midst of a splendid sonnata, he laid his hand upon his arm, and, with a not very gentle push, said, 'Get off that stool!' Seating himself, he dashed out in his inimitable style, and continued to play for some time without interruption, electrifying Coleman and the other auditors by an entirely new application of the invention. Suddenly he stopped, and turning to Benedict, requested him to get a certain piece of Beethoven's from the library, This was done, and Thalberg played it through. Then, striking his instrument with his hand and pointing to the music he said :—'*This* is the very instrument Beethoven had in his mind when he wrote that piece. *It has never been played before!*'

The next day Coleman sold his patent right for a sum that enabled him to take his place among millionaires."

Copper has risen very suddenly in price in the London market; the increase in price being about $100 on a tun.

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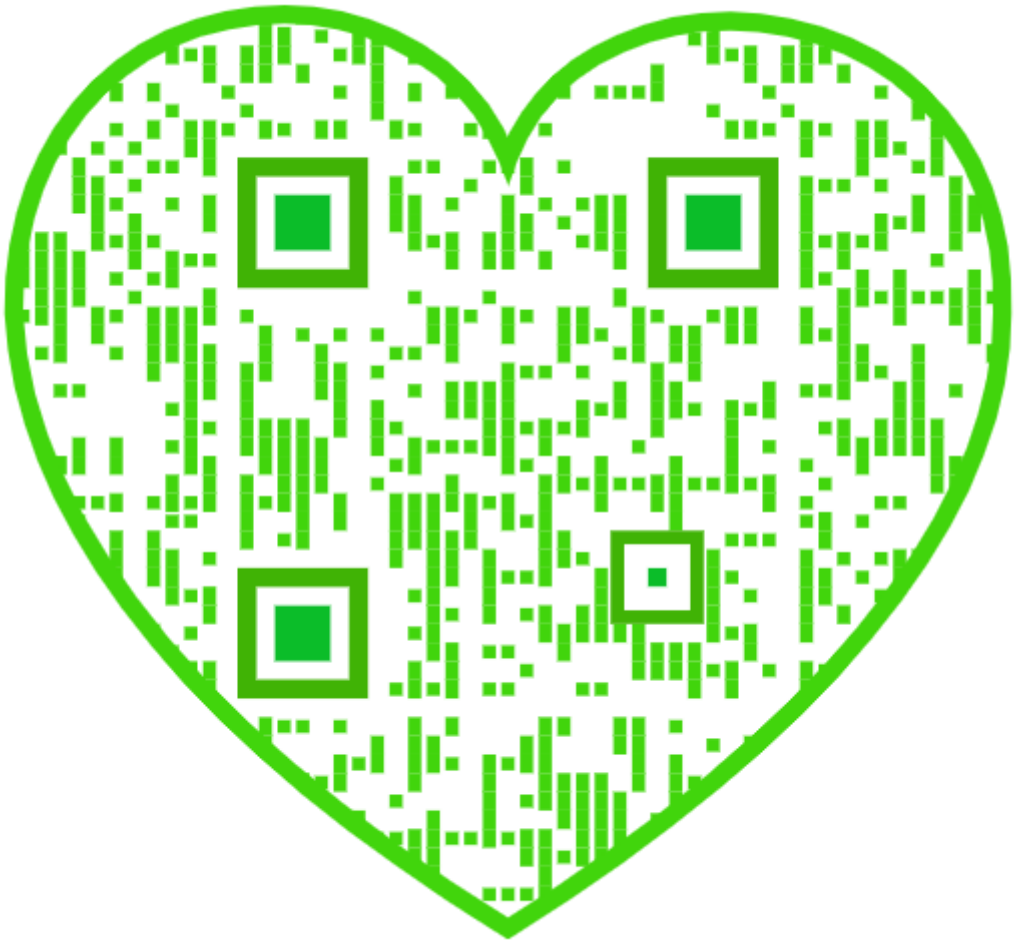

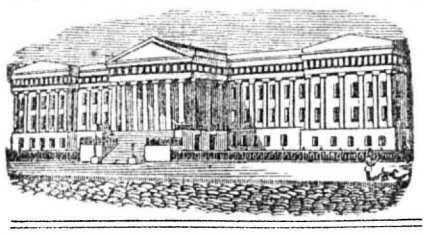

[Reported officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JANUARY 6, 1857.

DOOR SPRINGS—John Broughton, of Chicago, Ill.: I claim combining a flat or other suitable spring, H, with the leaves, D D, of the auxiliary hinge or other actuating devices, by means of a compound or double action toggle, I J, applied and operating substantially as described and for the purposes set forth.

[This invention effects a very desirable object in self-closing doors. By combining a spring with the leaves of an auxiliary hinge and a neat compound toggle, the door closes without slamming—the fault of all common spring doors—and is also held from being blown open by a violent wind. The device is simple and neat.]

GRINDING MILL—James Culbertson, of Covington, Ky.: I claim the combination of the long feeding channels, w w, in the grinding surface of the burr, with the discharging channels, x x, situated in positions just preceding the feeding channels in the revolution of the burr, arranged and operating substantially in the manner and for the purposes specified.

CROSS-CUT SAWING MACHINE—William Cady, of Eaton, O.: I do not claim any one of the devices separately considered

But I claim the connecting rod, D, vibrating lever, E, bar, F, lever, M, provided and connected with the saw, H, cord, N, lever, P, catch, Q, and brake, U, when arranged as described, for the purpose set forth.

BULLET MOLDS—Tristram Campbell and Henry B. Poorman, of St. Louis, Mo.: We make no claim to the series of parallel mold bars, as such is not new.

Neither do we claim the separation of the waste lead by the movement of the plate, through which the molten lead is poured.

But we claim the mechanical arrangement of the trough knife, J, with the lever, D, draw bar, G, and springs, C and I, operating as set forth.

BOSOM STUDS—J. Perley Derby, of Boston, Mass.: I claim a stem, to which is attached a slide, constructed with a slot and spring in the arms, substantially in the manner described, which, on being inserted through the holes of the garment which it is intended to secure—be it shirt bosom or other parts of the apparel—can be moved or pushed as far as required, and there secured by the force of the spring named.

FIRE HOOK—John G. Ernst, of Harrisburgh, Pa.: I claim the hook, E, constructed of the two parts, b c, and attached to the beam, A, which is provided with rounds, a, and mounted upon wheels, substantially as described, for the purpose set forth.

[This fire hook is so constructed and operated and moved on wheels, that the walls of burned or burning buildings in danger of falling can be levelled with facility and without danger. The improvement is a useful and humane one.]

ATTACHING FILTERS TO SUPPLY PIPES—James Fernald, of Boston, Mass.: I claim the combination with the main water pipe of a house, of a filter, an auxiliary pipe, and a waste pipe, the pipes being provided with cocks, and the whole arranged substantially in manner and for the purposes set forth.

UPSETTING TIRE—Russell W. Gates, of Homer, Mich.: I am well aware that various devices are employed in machines for upsetting iron, such as compound levers, cams, screws, &c., and therefore do not claim any of these things, either single or in combination.

I claim the use of the right and left threaded screw shaft, I, constructed and arranged as described, and operated in connection with the blocks, C C, for the purpose set forth.

MORTISING MACHINE—Charles Green, of Bethel, O., I do not claim as new in mortising machines chisels or bits, vibrating through the mortise, and simultaneously revolving about their axes, the stroke being varied as desired; nor yet the manner in which the stuff is fed to the action of the bits, and so forth, as such are common to other machines.

But I claim the combination, substantially as shown and described, of the frame or bar, A, with its slot, e, the T-shaped bars or pieces, E', with their slots, e, slotted frames or beds, F, pivoted in the rear, to the bars, E', and carrying the revolving chisel, arbors, or axles, G, slotted and double arms or connecting rods, H, and slotted driving arm, E, all arranged for operation together for the easy adjustment and simultaneous production, when desired, of different sized mortises in the one stick, and at varying distances apart, as set forth.

[The cutters of this machine are rotary, and placed on vibratory frames, operated by adjustable connecting arms, which are actuated so that several mortises can be cut at the same time, and these cut at greater or less distances apart, and of varying lengths. An excellent improvement.]

VELOCIMETERS FOR VESSELS—Andrew B. Gray, and Alexander H. Brown, of Washington, D. C.: We claim the use of the adjustable paddle wheel, which can be graduated to any number of revolutions by presenting more or less surface of paddle to the action of the water, in order, first, to fix it at its true point for registering correctly; and second, should any wear take place in the machinery for registering, it can at once be adjusted by changing the angle of the paddle

ROTARY SHEARS—Anson Hardy, of Dorchester, Mass: I claim, first, dispensing with the top beam or support, as commonly used, and supporting the carriage on the lower beam, to which the straight knife is attached, as set forth, by which means I avoid the expense of, and objection to a top beam.

I also claim the use of the revolving circular knife, when operated by two or more gears, that can be regulated so as to give any amount of drawing cut that may be required.

ANIMAL TRAPS—C. Jillson, of Worcester, Mass: I claim a new manufacture of animal traps, composed of the several parts set forth, and operating as described.

TRAVELING TRUNKS—Henry Loewenberg, of New York City: I claim the combination of the folding portions, L M N O, with the grooves and tongues, A B, and fastenings, to make an extensive trunk, in the manner substantially as described.

FORMING JOINTS FOR SHEET METAL—J. J. Laubach, of Easton, Pa: I claim the roller, J, attached to the pendent and swinging bar, J, which is connected or jointed to the arm, H, substantially as described for the purpose set forth.

[This improvement embraces a pressure roller attached to the ordinary machine for closing locks of sheet metal; the locks are pressed immediately after being closed. Heretofore, the locks after being formed have been compressed by hand with a mallet. This useful improvement saves much time and labor.]

WEATHER STRIPS FOR DOORS, WINDOWS, &c.—Jas. Smith, of Cleveland, O.: I claim in combination with a weather strip hung to its springs, a jointed rod and set screw for operating it, when said rod is made to press down the strip at one point only, as set forth, and this I claim whether the strip be arranged in the door, or in or under a shield on the door, or both, substantially as set forth.

HATS—Evan Morris, of Philadelphia, Pa.: I claim cutting or slotting the band of a hat, as set forth, to make that part of it soft and yielding to the head whilst, at the same time, it is made to retain the requisite stiffness and support, to give durability, as set forth.

ADJUSTING CIRCULAR SAWS—Josiah B. Pomroy, of Chicago, Ill.: I am aware that triangular-shaped notches have been formed around the inner periphery of a circular saw, and then the portions of the plate remaining between said notches have been expanded, for the purpose of permanently dishing the saw, without dividing its outer periphery.

I claim combining the concave cheeks, B B, and set screws, d d, with a circular saw, which has a slit, or slits, extending outwards a short distance from its inner periphery at the same time that the said saw has an undivided outer periphery, all substantially as represented and described and for accomplishing the purpose set forth.

FOLDING UMBRELLAS—L. K. Selden, of Haddam, Conn.: I claim the braces, F G, connected by pivots, b, and attached by pivots to the ribs. D, stretchers, E, and handle, A, as shown and described, for the purpose set forth.

[An umbrella made according to this invention can be very conveniently carried in a gentleman's coat-pocket. Jointed braces are attached to the inner ends of the ribs, to the stretchers, and to the upper end of the handle; these allow the umbrella to be folded in a small bulk, and at the same time a catch is not required to keep the ribs distended.]

RAKING ATTACHMENT FOR HARVESTERS—James H. Thompson, of Newark, N. J.: I am aware that vibrating rods have been used before. I do not claim such.

I claim the vibrating and intermittently rotating shaft, F', when fitted or placed in the bar, E, and provided with teeth, e, and operated by the wheel, G', hubs, f f', pawls, h j', cranks, F G, and connecting rod, d, arranged as described.

[This self-raking arrangement for harvesters is a very simple and apparently good improvement. The rake has a vibrating and intermittently rotating motion given it, to rake the grain in gavels from the platform in a very perfect manner. The devices for effecting the object are well arranged, and not liable to get out of order.]

METALLIC CROSS-TIES AND CHAIRS FOR RAILROADS—Andrew Teal, of Aurora, Ill.: I claim as a new manufacture my improved adjustable double chair, for supporting the rails of railways, and at the same time securing said rails in any position, the said double chair being composed of T-shaped metallic rails of suitable length combined with duplicate pairs of transversely grooved clamping blocks, substantially as set forth.

MAINTAINING POWER FOR TIME-PIECES — James Tuerlinge, of New York City: I do not claim giving motion to wheels or other articles by means of a sliding nut or weight on a screw or circular incline, as that is not new. But such an arrangement is objectionable as applied to a clock, because the weight hanging on a moving screw would cause so much friction as quickly to wear out the parts and derange the same, particularly if the clock be moved about, but by having a fixed screw or circular incline, down and around which the weight moves, all the strain and friction is taken by the said incline as a fixture, and the weight only acts on the parts of the clock through the medium of the rods, g g, or their equivalents, with the power required for propelling the clock.

Therefore I claim the fixed screw or circular incline, e, carrying the weight, f, combined with the rod, g g, or their equivalents, for communicating the motion and power from the said revolving weight to the wheel, h, substantially as specified.

I also claim the retaining spring, 10, on the weight, f, combined with the fork, o, and fingers, g, or their equivalents, that will lift the weight up bodily, and allow said retaining power to act, substantially as specified.

RIDING SADDLES—Seth Ward, of Princeton, Ind. I am aware that riding saddles with suspension seats are not new; also that metal springs have been employed in such saddles in various ways, for the purpose of giving elasticity to the seat; therefore I do not claim broadly the suspension of the seat, nor the making of the same elastic.

Nor do I claim the motion of the seat, nor the motion of the cantle, nor the hinges, for these devices are all shown in John C. Fr. Salomon's tree, patented Nov 18th, 1851. Neither do I claim any device embodied in Mr. Salomon's patent.

But I claim the application of an india rubber spring to the back part of the cantle, secured above and also below the semi-circular opening of the cantle by screw plates let in, operating in manner described, and for the purpose of obviating the necessity for any springs, either under the seat or cantle, it in itself giving sufficient elasticity to the seat, as shown.

[The elastic webbing under the ground seat, as connected with a spring in this saddle, imparts a gentle elastic motion to the rider in accordance with the motion of the horse, which, by way of comparison, is as agreeable as riding in a spring carriage in contradistinction to riding in one without springs.]

WIND DIRECTOR FOR WINDMILLS—Henry S. Wentworth, of Napoleon, Mich.: I claim a semi-circular revolving balance screen, operated variably, as set forth, by the power of the wind upon the revolving extra fan, M for the purpose of admitting only the requisite current of air to the wheel, substantially as described, whether placed in a horizontal or vertical form.

BUCKLES—Geo. P. Woodruff, of Watertown, Conn.: I claim constructing and combining together the bow and the tongue of a buckle, in such manner that the strap is secured between the two at the hinge of the buckle, substantially as set forth.

AIR-HEATING FURNACES—J. D. Greene and Edward Ivers (assignors to J. D. Greene,) of Philadelphia, Pa.: We are aware that a single inverted hollow cone has been used, in an auxiliary smoke-receiving drum, standing by the side of a furnace cylinder, and upon the same ash pit for the purpose of conducting cold air into the top of said drum, to mingle with the smoke therein, and find its way in part through the bottom of said drum, and the ash pit to the furnace chamber, and the remainder pass off with the smoke and gaseous products of combustion, as represented in Wm. Ennis' patent of March 29, 1853, and therefore we do not claim to be the first to use a hollow cone in a hot air furnace.

We claim the peculiar arrangement of the double series of smoke-conducting and air-heating tubes, with the other parts of our air-heating apparatus, viz., the series of smoke-conducting tubes being arranged around the exterior surface of the furnace chamber, with their induction smallest ends uppermost, and the series of air-heating tubes being arranged around the interior surface of the furnace chamber, with their induction smallest ends opening downwards, and both ends open to the atmosphere, all substantially as set forth.

SHIPS' COOKING STOVES—D. S. Beardsley (assignor to J. D. Underfield and D. S. Beardsley,) of New Haven, Conn.: I claim hanging a stove, to be used on ship-board by means of the hollow pivots and flue, as described, so that the stove shall always maintain an upright position, and the draft not be interrupted.

EXTENSION TABLES—Benj. Clark (assignor to E. L. Ferguson and C. B. Clark,) of Oriskany Falls, N. Y.: I do not claim the stiffening of hinged joints, by rigid bars or lips; neither do I claim the use of folding rails for extension tables.

But I claim the combination of the fixed side pieces, H I, with the table leaves, F, and table legs, D, in the manner specified—the side pieces, H, serving the double purpose of holding the table firmly together when compacted and closed, and also serving, in conjunction with pieces, I, to give stability to the frame, when the same is opened or extended.

[Folding or hinged rails in extension tables have many advantages, but for want of some suitable method of bracing and steadying the table, they have been discarded in favor of sliding frames. This new improvement removes the difficulty of their use, by combining certain fixed pieces, with the folding pieces, for strengthening and steadying the table, both when it is open and shut, thus giving the folding rail table superior advantages.]

VALVES FOR STEAM ENGINES—Cornall Bradley, of Manchester, Va.: I do not confine myself to a circular chamber on the valve rod for the back of the valves to fit into, as any other form would work equally as well.

I am aware that valves have been made, heretofore, to work against the steam chest cover; this I make no claim to.

I claim making the valves of steam engines with two surfaces—one being exposed to the action of the steam downwards against the valve seat, the other surface exerting a contrary pressure into the chamber, the inside of said chamber being in communication with the atmosphere, the whole being arranged substantially as specified, for the purpose set forth.

RUDDERS—A. B. Crossman, of Huntington, N. Y.: I disclaim the making of a rudder in two parts, one of which is movable, for devices of this kind have long been known; an example is seen in "Newton's London Journal," conjoined series, Vol. 26, page 158, plate 9, figs. 7 and 8. In this device the main rudder is provided with a movable attachment on its rear, so arranged, that when the rudder strikes a rock or shoal, the movable piece will rise and prevent injury, either to the vessel or rudder. Another example is seen in a French work, published by the French Government at Paris, in 1824, entitled "Memoirs of American Steam Vessels, by M. M. Morriestier" This consists of a movable piece attached to the rear of the rudder, and so arranged that it can be raised and lowered, so as to extend at pleasure the length of rudder surface presented to the water, and thus cause the water to obey the helm quicker. In smooth water this device is perhaps advantageous, but it is evident that the power required for steering will be much increased by widening the rudder surface. This device, therefore augments the very evil, which mine is intended to obviate.

I claim the attachment to the rudder, A, of an extension piece, B, when the said extension piece is so combined and employed as to render the rudder wholly or partially self-balancing, as set forth.

[This rudder is formed with a movable balancing extension piece, so connected with the portions of an ordinary rudder, as to admit of being held exactly in rear, or to swing underneath the rudder, and partly beneath the keel, where it acts with great effect. The rudder is easily controlled, and can be graduated to any desired pressure on the tiller, by merely drawing back the extension piece. When drawn entirely up, it constitutes a rudder of the usual width for sailing in the shoalest water.]

CARRIAGES—J. W. Crannell, of Olivet, Mich.: I claim the mode of constructinn the carriage body in two parts, the inner ends chamfered or rounded below, said bodies being attached to two elastic bars, J, in combination with the independent seat frame, rounded as at I, and carrying inside two springs, F F', or their equivalents, in either a horizontal or vertical position, but whose action is horizontal and against the chamfered and detached ends of the carriage bodies for the purposes, as described and set forth, of producing a gentle and undulating horizontal movement in the seat, or any other device, whose effect may be substantially the same.

I also claim the use of the stop plates, G G, operated by screws, or otherwise, for the purposes as described, of regulating the elasticity of the springs, F F.

LOOMS—Francois Durand, of Paris, France: I claim, first, the combination with a stationary race-way of a reed, passing entirely through the same, substantially as specified.

Second, the weft thread needles, q, controlled by a jacquard machine or other pattern mechanism, to operate as described, upon the weft threads, in combination with a thread carrier of the character specified.

Third, the unhooker, t, operating in combination with the thread carrier, substantially as and for the purpose specified.

[This ingenious improvement is applicable to plain, fancy, figured, and other kinds of weaving by hand or power looms. The invention relates to placing the weft threads betwixt the warp threads by means of a continuous circular motion. Without engravings it is impossible to give a correct idea of the method for accomplishing the objects stated, suffice it to say, that such a motion in the art of weaving cloth, has long formed the subject of study, to those who have devoted attention to the art of weaving in the common looms, in which the motion of the shuttle has to be violently arrested every stroke.]

TANNING HIDES—Edwin Daniels, of Lafayette, Wis.: I am aware that saltpeter and alum have before been used in different proportions, in other processes for tanning leather; and I am also aware that sulphuric acid has been used in various ways, in other processes for tanning.

I claim the use of saltpetre, alum, and sulphuric acid respectively, in solutions of catechu, or other substance containing an equivalent amount of tannin, substantially in the proportions, order, and manner specified.

STALLS FOR HORSES—Henry Eddy, of North Bridgewater, Mass: I claim nothing original in the construction of the main body of the stall, and nothing original in the combination of a deep crib, or manger, with an oblong hole, for the insertion of the head and neck of the horse.

I claim a crib, or manger, with the inclined planes, H H, constructed and arranged substantially as described.

Also the space, g h k, partially inclosed by the inclined planes, H H, with a vertical opening, I, substantially as described and for the purpose set forth.

SLIDE VALVES OF STEAM ENGINES—R. H. Fletcher, of Brooklyn, N. Y. I claim the arrangement of the slide valve, F, and stem, J, with their operative parts within the steam chest, as described, so that they may be operated from the piston head within the steam cylinder, by means such as set forth.

MEASURING BOARDS—James Jones, of Rochester, N. Y.: I am aware that the quantities of areas have been indicated by means of the combination of a cone or disk, with a roller sliding thereon; therefore I disclaim the use of the above elements, either separately or when combined with a single index, as in the machine of M. Ernest, described in the "Bulletin de la Societe de l'Industrie Nationale" Vol 40, pl. 841.

But in all the cases which have come under my observation, the instrument constructed on the above principle, have been used only for application to plans or drawings of the area to be measured; and, therefore I claim my means of so adapting the instrument that it may be applied to the actual surface, whether of a board or other article, such means consisting of the outer and inner disks, combined with the two indices, one of said indices being intended to regulate the position of the friction roller on the inner disk, and the other for indicating the quantity measured.

ARTIFICIAL LEGS—B W. Jewett, of Gilford, N. H.: I do not claim the tendo Achilles, J. But I claim, first, the spiral, D, in combination with the rod, K, hook, L, and cross brace, o.

Second, the method of attaching the tendo Achilles, and the cord, N, to the thigh, by the use of the pins v and W.

Third, the bolts, G and F, in combination with the straps and their metallic boxes, all for the purposes specified and operating substantially in the manner as before set forth.

MILKING SHIELDS—O. H. Needham, of New York City: I claim combining the perforated band or ring, A, or its equivalent, with the yielding lining, a, in the manner substantially as described, whereby an inward pressure against the teat, or nipple, is produced, the point of said pressure being changeable at pleasure, as set forth.

[This milk shield is chiefly designed for milking cows, and is a good invention. It is frequently required to remove the pressure from one part of the teat, in order to give relief from pain; this can be done by this shield and great relief afforded. This is an improvement on a patent already issued to Mr. Needham for Breast Pumps.]

COP TUBES—Nathl. Whitmore, of Somerville, Mass., (assignor to G. W. Keene, of Lynn, Mass., and himself:)

I claim the tube, H, with its backing, b, in combination with the spindle, I, operating in the manner substantially as set forth, for the purpose specified.

Second, I claim the tubular step for the support of the tube, while it is being flanged, in combination with the receiver, N, operating in the manner substantially as set forth.

ANCHORS—T. L. Dalton, of New York City; I claim an anchor constructed substantially as described.

REDUCING ZINC ORES—Saml. Wetherill, of Bethlehem, Pa.: Although I have described and represented a form of furnace in which to work my improved process, and which I have found to answer a good purpose, I do not wish to be understood as limiting my claim of invention to the working of the process in such a furnace, as other equivalent furnaces may be found to answer the purpose.

I do not claim the said charcoal or carbonaceous matter for condensing in or upon it, the said zinc vapor.

I claim in the process of obtaining metallic zinc directly from the ores of zinc, causing the metallic vapors of zinc, driven off from the ore, to pass through a charge of heated incandescent coal, or other carbonaceous matter, substantially as and for the purpose specified.

CULTINATOR TEETH—James P. Cramer, of Schuylerville, N. Y. (assignor to Hiram Cramer:) I claim as a new manufacture my improved cultivator teeth composed of a properly shaped sheet metal blade and shank, with an iron head, cast upon the shank and embracing its outer and inner surfaces in such a manner that the said blade, shank, and head of the tooth, will form but a single piece, substantially as set forth.

HEMP BRAKES—S. H. Little, of St. Louis, Mo.: I am aware that the throat through which the hemp passes, to be acted upon by the beaters, has been so arranged that it could be placed at different distances from a throat formed of beating bars, secured in an oscillating frame, and therefore I do not wish to be understood as claiming said arrangement.

I claim placing the feeding rollers, C C', and the throat bars, D D, in one and the same movable frame, for the purpose of enabling said frame to be so adjusted as to give any desired space between said throat bars and the beating bars of the reciprocating gate without varying the distance between said feeding rollers and the throat bars, D D, substantially as set forth.

I also claim the securing of the throat bars, D D, within their supporting frame, in such a manner that they can be so adjusted as to form a wider or a narrower opening between them, for the purpose of adapting the said throat opening to the reception of hemp stalks of different sizes; but this I only claim when the said throat bar supporting frame, is so arranged, in relation to the supporting frame of the reciprocating gate, that their distance from each other, can be so adjusted, that the action of the beaters will be exactly adapted to the size, quantity and condition of the hemp stalks fed through said throat, substantially as set forth.

I do not claim an oscillating grating, used as a whipper, in machines for breaking hemp, for such, I learn, is involved in an interference now pending between the applications of S. A. Clemens and C. Simon, before the Patent Office; and I am also aware that it has been proposed to rigidly combine a shaking shoe, with an oscillating throat bar frame; and therefore I do not claim said combination.

I claim the combination of the shaking shoe, F, with the reciprocating gate, E, when they are arranged, substantially as set forth.

PUMPS—G. W. B. Gedney, of New York City: I do not claim a double-action pump with a slide valve and independent valve motion, as that is not new, but is found in the patent granted to J. H. Webster, Feb. 12th, 1851.

But I claim the working leaf valve, or four-way cock, constructed as specified, and arranged with respect to the two cylinders and solid pistons, so as to give a more direct and unobstructed course to the water than is obtained in the slide valve pump, patented by Webster, in the manner and for the purposes set forth.

DESIGNS.

UPRIGHT STOVES—A. J. Blanchard, of South Reading, Mass.

EVER-POINTED PENCIL CASES—J. H. Knapp, of New York City.

[The case is in the form of a cannon, provided with beads, the whole forming a new and beautiful design for a pencil case.]

CLOCK-CASE FRONTS—Chas. Chinnock, of New York City.

[This clock-case front is formed with the configuration of a wreath and projecting scrolls, the whole forming a new and very ornamental design for a clock-case front.]

[NOTE.—The above list of patents includes the issues for two weeks. Business having been pretty much suspended at the Patent Office during the holidays, no patents were issued from the Department last week.

We recognize the names of about ONE-THIRD of the patentees in the above list, whose cases were prepared and prosecuted to a successful termination, through this office Every week patentees write to us for information as to the best mode of introducing their inventions. In reply to all such inquiries, we would say, get your invention before the public; let the world know what you have got. If you have a meritorious invention there is no difficulty in finding cash customers for it. Avail yourselves of the best means, and every medium, in fact, that comes within your means, for letting the world know what you have got, and if it is a good thing it will sell.—[ED.

A Monster Turn-Table.

The *Pennsylvanian* describes a monster turntable which has just been completed by Messrs Sellers, of Philadelphia. It is 54 feet in diameter, manufactured of cast-iron, weighs 62,276 lbs., and revolves on Parry's celebrated Anti-friction Box. [See engraving on page 317, vol. 9, SCI. AM.] Notwithstanding its great size and weight, however, it can be started and kept in motion with ease by a four-pound pressure. A cord placed upon a pulley, one end being attached to the table, while a four-pound weight is tied to the other, is all that is necessary to move the table. It is designed for Great Bend, having been ordered for that depot by the Delaware, Lackawanna and Western Railroad Co.

Virginia Iron Manufacture.

Several enterprising Pennsylvanians have entered upon the manufacture of iron on the line of the Virginia Central Railroad, and with others are about to organize a company. It is said they have already secured 20,000 acres of the best iron ore land in the State. In view of these facts, the Richmond *Whig* is induced to believe that Central Virginia, with her abundance of mineral, and all the resources to make iron cheaper than at any other place, will yet become the Birmingham of America.

The ice in New York Bay and the rivers is more obstructive to navigation this winter than it was last year, although the weather has not been so cold.

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Improvement in Constructing and Working of Locomotives.

(Concluded from page 139.)

The Engine.—The engine proper is the dispenser of the steam power from the boiler, comprising the cylinders, pistons, driving wheels and gearing. The general conditions of best action are, that the steam should be freely admitted into the cylinders, and freely exhausted; that it should be efficiently worked by variable expansion gear, and that it should be well protected from condensation by exposure. It may be added that the steam should be not merely protected, but superheated also.

Expansive working in locomotives can be done well and economically by means of the link-motion. The steam may be admitted freely and expanded sufficiently; it may also be exhausted freely, as, by a suitable arrangement of the smoke box and the blast pipe back exhaust pressure on the piston can be entirely removed. Expansion may be carried, by the agency of the link-motion, to eight times —that is, the steam may be cut off at 1-8th. In exposed cylinders, the condensation of steam by exposure is considerable—the per centage increasing with the degree of expansion, until, in cutting off at 1-8th, the loss may amount to 60 per cent. of the whole steam admitted into the cylinder. Incidentally, outside cylinders are more exposed than inside, and therefore in the former the condensation is generally greater than in the latter: this explains how, in popular language, outside cylinders are said to prime more than the inside.

The remedies for this state of things are, to protect the cylinders from external cooling, and to superheat the steam, either on its way to the cylinders, or while it is within the cylinders, by external application of heat. The additional supply of heat is beneficial also in evaporating the water which, more or less, primes over with the steam from the boiler.

The saving of fuel realizable by such means should be, at the lowest estimate, 10 per cent.; it might, and probably would, be much greater if applied in the best manner.

There is, in general practice, a deficiency of accommodation for working steam so expansively as it could be worked with advantage, owing to the limited dimensions of the cylinders.

The average period of admission of steam into the cylinders, even on light duty, is, in ordinary practice, as much as from 40 to 50 per cent. of the stroke, showing that the practice of expansive working in locomotives is open to improvement. There is no great difficulty in arranging for general practice, to cut off at least as early as at one-fifth of the stroke, which would economise 25 per cent. of the fuel consumed for an average period of admission of four-ninths of the stroke.

The slide valves working under steam pressure on the backs of them, offer considerable resistance to motion. Unbalanced slide valves ought to be superseded by the application of means for preventing the incumbent pressure. If an inference may be based upon the coefficient friction between cast-iron and brass, which is about one-fifth of the pressure, the resistance of an ordinary valve of 120 square inches area, under 100 lbs. steam, would be about 1 tun. With an average travel of 4 inches, and 5 1-2 feet driving wheels, the resistance of such valves would be represented by 185 lbs. traction at the rails, or 1 1-4 lb. per tun, of a gross average load of 150 tuns, equal to 6 per cent. of the whole power required to draw the train at 30 miles per hour, allowing a resistance equal to 20 lbs. per tun gross.

By a number of experiments instituted to test the relative amount of fuel consumed per mile by different locomotives—both inside and outside cylinders—it was found that, doing about the same work, there was a difference of as much as 40 per cent.; that is, a locomotive constructed by one company did the same work as that made by another company, with 40 per cent. less fuel, thus showing how much may be saved in the working expenses of railroads by having locomotives constructed on the best principles.

Conclusion.—The economy of working expenses due to the improvements described, may be estimated on the following assumptions:—

First, that the consumption of fuel may be accepted as an index to the working charges generally of locomotive stock.

Second, that the average costs per tun of coal and coke, for locomotive purposes, are as 2 to 3 generally.

Economy with respect to the Boiler.—The successful substitution of coal for coke, which has been found to be equally efficient, weight for weight, reduces the cost for fuel 33 per cent. The use of an efficient feed-water heating apparatus economizes generally 15 per cent. of the fuel. The use of pure feed-water instead of ordinary unprepared water may economize 10 per cent. of fuel.

Economy with respect to the Engine.—The thorough protection of the cylinders, and superheating of the steam may economize at least 10 per cent. of fuel. Accommodation for promoting the expansive working of steam may economize 25 per cent. of fuel.

Economy with respect to the Carriage.—The correct equilibration of the engine, to insure steady running, economizes 10 per cent. of the fuel consumed by an unbalanced engine. This may be accepted as an average result, because, for inside cylinder engines the saving would be less, and for outside cylinders and coupled wheels it would be more.

Putting together, by a process of compound reduction, these items of economy, it appears that by purifying and heating the feed-water, by superheating the steam, and protecting the cylinders, by greater expansive working, and by correct equilibration of the engine, a joint economy of 54 per cent. may be effected.—Further, by substituting coal for coke as fuel, and properly burning it, a reduction of 33 per cent. in cost of fuel may be effected. The cost of fuel may be averaged at one-third of the total locomotive charges, and a reduction of 33 per cent. is, therefore, equivalent to a reduction of 11 per cent. of the total charges. Applying this reduction, there is a gross resulting economy of 58 per cent. of the locomotive charges. A reduced economy of 50 per cent. may be accepted as the probable gross average saving that may be effected in the consumption of fuel and generally in the working charges of the locomotive stock of the railways in the United Kingdom.

Mr. Clarke acknowledges the incompleteness of this investigation. His object has been to direct the attention of engineers to the saving that may yet be effected in the working of locomotive stock.

After Mr. Clarke's paper was read before the Institution of Civil Engineers, London,—it having been previously printed and circulated among the members—it was brought up for discussion at the succeeding meeting. It was there stated that since the paper was written the process of equilibrating locomotives had been extensively applied on the Southwestern Railway, producing an economy of 11 per cent. in fuel. It was also stated that 25 per cent. of fuel had been saved on American railroads by heating the feed water of the boiler. On the Shrewsbury and Hereford Railway a great saving had been effected by using all coal as fuel, in place of coke. On the Northern Railroad (France) scarcely any other fuel than coal is used; and on the Southwestern, (England,) coal had been used with complete success; and by careful firing there was an entire absence of smoke.

Gas from Wood.

MESSRS. EDITORS.—Your valuable paper (as much esteemed in Europe as in America,) No. 4, Oct. 4th, 1856, contains the following phrase:

"We see paragraphs every week in some of our cotemporaries, describing the successful manufacture of gas from wood. Why this is nothing new or wonderful, it is half a century old; but can such gas be manufactured as cheap as that from coal? It cannot, nor as cheap as that from resin or resin-oil, and why continually harp upon a comparatively worthless invention?"

True, wood gas was generated half a century ago, by M. Lebon, a Frenchman, but nowhere, neither in Europe nor in America, could said wood gas, in any of the gas-works of said countries, be introduced, because it had no bright light, no lighting power at all. Since 1850, the distinguished German chemist, Dr. Pettenkofer, at Munich, Bavaria, and his friend Mr. Ruland, engineer, have invented a new chemical process for generating gas from wood, (Letters Patent were granted to them May, 1856, at the United States Patent Office, Washington;) since then wood gas has come into general use all over Germany, as well as in Austria, France, Italy, and even in Spain and Russia, (St. Petersburgh is lighted with this new wood gas since 1855.) By the new process above mentioned, two great advantages are combined, viz., cheapness and brilliancy of the gas.

No doubt wood gas can be generated as cheap as coal gas, and much cheaper than gas from resin and resin oil. Out of one cord of wood (hard or soft) 15 to 18.000 cubic feet of gas are manufactured, whilst one tun of coal yields, at most, 10 to 12,000 cubic feet, and one barrel of resin 2,000 cubic feet.

In many parts of America coal is difficult of access, whilst wood is in abundance, and there wood gas is of more advantage than coal gas. But even in places, as for instance, New York, Philadelphia, &c. &c., where the average market prices of a cord of wood and a tun of coal are equal, wood gas can compete with coal gas, for the reason of the greater quantity of gas from a cord of wood than from a tun of coal. Besides the residuum of wood gas, charcoal is to be sold at higher prices than the residuum of coal—coke. Other products of wood gas distillation—pyrolignate of lime and wood tar—are also marketable at good prices. Now, with regard to the quality of wood gas, many experiments have tested it as superior to coal gas.

The foregoing will be sufficient to remove all doubt about the introduction of wood gas.

EMIL V. BREISACH, Chemist.

Augsburg, Bavaria, December, 2nd, 1856.

[Our correspondent does not make the distinction as to the quality of the illuminating gases obtained from coal, wood, and resin. One cubic foot of resin gas is twice the weight of one cubic foot of coal gas, and is of more than twice the illuminating power—being as to 5 to 2. What comparison will wood gas bear in illuminating power to coal or resin gas? It is necessary to know this in order to understand its value, for 1000 cubic feet of resin gas, at $4, is cheaper than 1000 cubic feet of coal gas at $2. Supposing we only obtain 12,000 cubic feet of gas from a tun of cannel coal, if mixed with 6,000 cubic feet of air, we then have 18,000 cubic feet, the same amount as that obtained from a cord of wood, according to our correspondent's statement. Well, 12,000 cubic feet of coal gas can afford to be mixed with 6,000 cubic feet of air, and still be more ecomomical for illuminating purposes, than 18,000 cubic feet of wood gas. The composition of pure cannel coal is, carbon 87·27, hydrogen 7·88, oxygen 4·85=100—not quite five per cent. of oxygen. Wood is composed of carbon about 50, hydrogen 6, oxygen 42·50, nitrogen 1·50=100,—eight times the quantity of oxygen contained in coal, and nearly two per cent. less hydrogen. The value of the material for making illuminating gas is, according to the amount of hydrogen it contains in proportion to its carbon; if it contains no oxygen so much the better, for it can be obtained at no cost from the atmosphere. No invention in the manufacture of wood gas can change the nature of the materials; therefore, wherever cannel coal is abundant, it is cheaper than wood for making illuminating gas. In some parts of our continent, as well as in some parts of the continent of Europe, where wood is cheap and abundant, and coal scarce and dear, wood gas is no doubt the most economical. The manufacture of gas from wood has been attempted at various times in some of our cities—North and South—and some of these experiments are well known to us, but it cannot be manufactured so cheap as that from good coal, resin or resin oil, in but few parts of the United States.

In Montgomery, Ala., the price of gas is $6 per 1,000 cubic feet. The gas, we understand is made from resin, and is as cheap as coal gas.

Great War Engine.

MESSRS. EDITORS—Noticing in your issue of January 10th, an article under the head of "Wonderful New War Machine," in which great doubts are expressed in regard to the invention of so terrible a machine, I hasten to lay before your readers something of a history of a machine invented in the year 1836-7, by Mr. Benjamin Reynolds, of Kinderhook, this State.

The machine referred to was called a "centrifugal battery," of a circular form, 22 inches in diameter, and 3 inches in thickness. This machine was put in operation by means of two cranks, one on each side of the carriage on which it was placed, for the purpose of being transported from place to place.

The writer of this article was one of three persons who, during the autumn of the year 1837, exhibited it to the officers of the U. S. arsenal at Gibbonsville, when under the command of the late General Worth, who invited the Governor and heads of the State departments to witness the exhibition. All who witnessed its operation spoke of it in terms of the highest commendation. Col. Worth advised us to take it to the city of Washington without delay, as he thought it of great importance to the country; but requested us to exhibit it at West Point, N. Y., on our way thither, which we did. It was put in operation by order of Col. Derusie, who then commanded at that place. At 110 yards, the balls of 2 oz. weight were thrown through three thicknesses of 1 1-4 inch Georgia pine, at the rate of more than one thousand per minute! The Commandant and professors expressed great astonishment at the power of the machine, which was put in operation on all occasions by one man at each of the cranks.

The third trial took place at Greenleaf Point, D. C., under the inspection of Captain Ramsay; ex-President Van Buren, and most of the heads of departments of the United States being present; the effect upon those who witnessed its operation being the same as upon those who had witnessed its operation at the other places.

The fourth trial was had before a committee of Congress appointed for that purpose. At this trial the committee exercised great perseverance; first, in regard to its power and range, and, second, in regard to the number of shots projected in a given time. On this occasion the power applied was as before, one man at each of the two cranks. The target, three thicknesses of one inch pine planks, at the distance of 150 yards. Each ball was projected through the target, and falling from three to four hundred yards beyond it into the Potomac river. They were not so successful, however, in determining the number of shots thrown in a given time. In this test sixty balls of 2 oz. were placed in a tin tube of sufficient size and length to contain them. One end of the tube was then placed at the admitting orifice of the battery, into which they were carried by the action of gravity and the exhausting disposition of the machine. The space of time taken for the projection of sixty shots was so small a portion of a *second* that the committee could not report any specific space of time at all.

A model, drawings and specifications of this machine were duly deposited in the Patent Office of the United States at that time. A four-pound battery of this description is in course of construction in this city at the present time. JAMES REYNOLDS.

New York, Jan. 1857.

Powder for Razor Strops.

Take equal parts of sulphate of iron, (green copperas of commerce,) and common salt; rub them well together, and heat the mixture to redness in a crucible. When the vapors have ceased to rise, let the mass cool, and wash it, to remove the salt, and when diffused in water, collect the brilliant scales, which first subside; these, when spread upon leather, soften the edge of a razor, and cause it to cut mooth.

800,000 lbs of madder are used for coloring in the dye works at Lawrence, Mass., every year.

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New Inventions.

Hoop Splitting and Planing.—Erratum.

On page 124, this volume, in the illustrated description of the excellent hoop-splitting and planing machines of the American Hoop Machine Co., Fitchburgh, Mass., it is stated that the planer "planes at the rate of from 50 to 70 hoops per minute." It should have read from 50 to 70 feet of hoop per minute. Of course we did not know the amount of work it could perform, and we understood Mr. Sawyer to say *hoops*. The mistake was a very natural one. We are also requested to state that the hoop-splitter can readily be adjusted to suit any size of hoop-pole, and split it through the center.

Brick Machinery.

The accompanying figures are views of new machinery for molding brick, by Mr. Clayton, of London, and published in a recent number of the *Engineer*.

The great object of the improvement is stated to be the mechanism devised for giving clear and well-defined angles to the bricks. Any improvement in brick machines is of great and general importance, because brick is a building material which ever has been, is now, and always will be very generally employed in almost every country on the face of the globe.

A reference to the subjoined engravings will give a general idea of the machine, in which fig. 1 gives a sectional elevation, fig. 2 a ground plan, fig. 3 a vertical section of the rotary lubricating glands, and fig. 4 a sectional plan of the cylinder and glands.

The power is applied by a belt from a steam engine or other motive to the drum, *a*, on the shaft, A, which carries a pinion, *b*, gearing into the spur wheel, *c*, on the shaft, B, which carries a pinion, gearing into the spur wheel, *e*, on the shaft, N. The shaft, B, also carries a bevel wheel, *f*, gearing into another bevel wheel, *g*, on the upright shaft, L, which carries at its upper extremity a pinion, H, gearing into the spur wheel, K, on the upright shaft, M, which passes through the center of the iron cylinder in which the clay is pugged, and is furnished with a series of screw blades or knives for that purpose, *m m* and *n*. The peculiar form and arrangement of these blades will be readily understood.

The clay, after being properly weathered and moistened with water, is thrown by hand labor into the cylinder, and the action of the screw blades incorporates the material to a uniform consistency, and then forces it into the lower chamber shown in fig. 4. In this chamber there is a rectangular piston, P, which derives a reciprocating motion from the crank on the shaft, N, and the connecting rod, R. By means of the piston which is shown in the dotted lines at the two extremities of the stroke, the clay is forced through the rectangular dies, *p*. To prevent the abrasion of the corners of the mass, the dies are furnished with two rollers, one on each side, which form the lateral boundaries of the die, *o o*. These revolve on their axis as the clay exudes from the dies, with a speed somewhat in advance of that at which the clay issues. These cylinders are moved by belts taken from a small pulley on the shaft, L. The arrangement seen in fig. 2.

y is the oblong mass of clay after it has been projected from the pug mill on the platform of rollers in front of it. The cylinders, *o o*, if not worked, would have a tendency to tear off pieces of the clay as they revolved, and would soon get clogged. To prevent this, the peculiar arrangement of having them furnished with what we have called salivary glands, is had recourse to.

Fig. 3 shows a section of the lubricating cylinders. From a couple of small reservoirs a continuous supply of water is afforded to the tops of the lubricators by means of a pipe and stop-cock. The water so supplied is directed on the top of the lubricators, and by means of the orifices shown, it percolates through a covering of moleskin wrapt round the lubricators. The effect of this is to present towards the clay, as it issues from the dies, a surface somewhat resembling a mucous membrane, which continually exudes the moisture derived from behind it.

After the clay has been delivered in a large oblong mass, as represented by *y*, fig. 1, it is cut by the wires in the hinged frame, S, into the breadths required for single bricks. As the clay is, by the reciprocating action of the piston, forced out alternately on the two opposite sides of the pugging cylinder, there is time for each mass to be cut up and removed from the table before the succeeding one can interfere with it.

BRICK MAKING MACHINERY.

Fig. 1

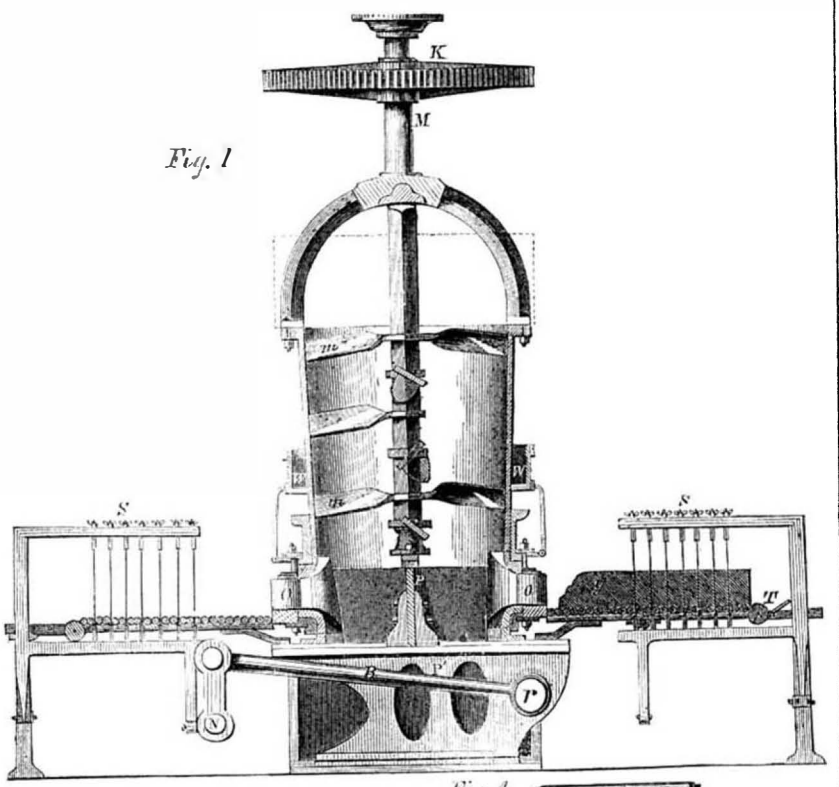


Fig. 4

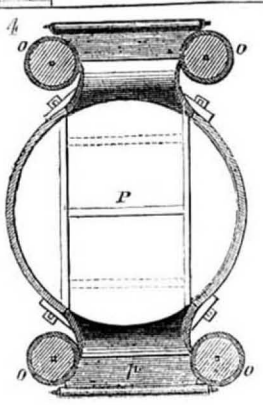


Fig. 3

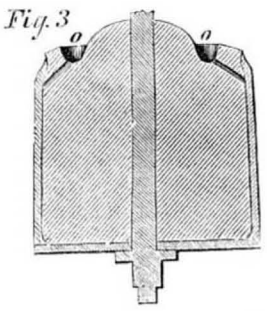
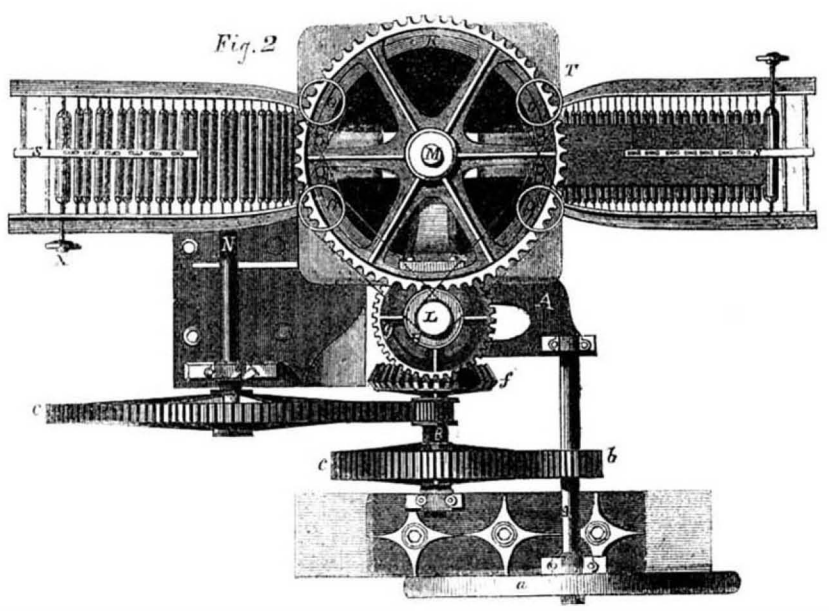


Fig. 2



The Editor of the *Engineer* says :—"With regard to the machine we have described, it unquestionably bears evidence of very considerable mechanical ingenuity, an amount of patient study of the requirements of the manufacture to which it is adapted, and a degree of what, for want of a better term, we must call plastic talent, that we have rarely met with in machinery of this description.

With regard to the practical value of this implement, our first impression concerning it was that, although exceedingly ingenious and curious, and well adapted for making an effective demonstration at an agricultural exhibition, there were several parts of it which we imagined were not altogether suited to continuous every-day use. We must confess, however, that further inquiry on this head has had the effect of very considerably modifying our first impressions. From inquiries made among those who could have no conceivable motive for stating anything which was not the result of their own experience in the matter, we have every reason to believe that the brick-making machine of Mr. Clayton is found in practice, by those who have the best means of forming an opinion on the subject, to be the most efficient apparatus yet brought before the public."

In England, as in our own country, there are two kinds of brick machines in use, the one kind for pressing *dry*, and the other *wet* clay. This one of Mr. Clayton is adapted for the wet method. The advantage sought to be obtained by pressing the materials in a dry state is the use of less fuel in burning them, also less liability to crack in the kiln. But it requires much heavier and stronger machinery for a dry brick press, and far greater power to work it than a wet brick press, hence the latter press is considered to be the most advantageous, as a whole.

In the press represented, the clay is forced through a rectangular orifice, of the sectional form of a brick, in a stream, and then it is cut into the proper size of brick afterwards. In forcing clay through a rectangular orifice, the corners of it are liable to be ragged, because they have to encounter a greater resistance from friction. This evil does not, indeed, attend the pressing of the wet clay in those machines which have separate molds, but these are slower in their action than the kind here illustrated; and as it obviates the evil of forming imperfect angles to the bricks by the ingenious arrangement of the lubricating glands, it really appears to be a good improvement.

Wonderful Growing Stone.

We have received a communication from Chilian Beach, of Leslie, Michigan, in which he minutely describes a stone which has been in his possession for twelve years, and which, during that time, by simple exposure to the air only, has—Young-America-like—been performing feats of a progressive character. When he obtained it twelve years ago, it was a little more than half an inch long and three-eighths in diameter. It has now grown five-eighths of an inch long, and to half an inch in diameter. This increase of the stone is about in the same ratio as that of our population, which is not a little remarkable. The most curious feature of this increase of the stone, is not an equal expansion, but a particular emanation proceeding from one side of the parent stone. "The stone," he says, "is the most perfect white, transparent, will cut glass, and increases in size and weight with no other food but common air." He has never yet found a person who could tell what it was, or give him any explanation as to the cause of its growth. "Wonders will never cease." We really had thought that the days of wonderful traveling and growing stones had gone past forever, but this one of Mr. Beach proves that this age is not behind any of the past in natural wonders, and that in Leslie, Michigan, there is a stone at present as wonderful as the famous one which floated St. Patrick from old Scotland to old Ireland.

The People's College.

The location of this institution has been made at the beautiful village of Havana in Schuyler Co., N.Y. The site is a farm of one hundred acres, on an eminence about half a mile from the town. Excellence of soil, beauty of prospect and salubrity of air are combined in it. The generosity of the Hon. Charles Cook secured the choice of Havana from the locating commissioners. He gave $25,000 to the funds of the institution. His gift to this village of the perpetual good influences of the People's College upon its society will be a legacy which it is the fortune of but few men in this world to make to the community in which they live.

This College was first suggested by the Mechanics' Mutual Protection, an Association of Working Mechanics, the objects of which originally were mutual improvement, and to promote good will among employers and employed. The objects of the College are the education of young men for practical, every-day pursuits—for farmers, mechanics and artisans. They will be taught practical mechanics, all kinds of engineering, chemistry, geology, mathematics, &c. Connected with this is the idea that every student should at the same time be a worker—that his mental sanity and bodily vigor required the devotion of some hours of each day to muscular exercise.

To Clean Marble.

Mix up a quantity of very strong soap lye with quick lime, to the consistency of milk, and lay it on the marble you wish to clean, where it may remain twenty-four or thirty hours; afterwards wash off, with soap and water, and it will appear as if new.

Lemon juice is principally relied on by th physicians in London for curing rheumatism. Three tablespoonfuls per day is a dose for a man.

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Scientific American.

NEW YORK, JANUARY 17, 1857.

The Chinese Sugar Cane.

This plant is causing no small amount of excitement among our agriculturists at present. Several articles have appeared in our columns respecting it, and there is scarcely a periodical devoted to farming, that we take up to read, but contains either editorial remarks or letters on the subject of its cultivation.

Further experiments are required to solve the question of its value as a source for obtaining sugar—North and South—from its saccharine juice; but for a forage crop there seems to be no doubt of its value, and that it will be extensively planted for such purposes next spring.

It is a matter which certainly deserves positive and general attention, because every improvement in agriculture, whether it be in its chemistry or in the introduction of a new plant like the Chinese sugar cane, secures a general benefit, if the surplus products of the soil are increased thereby, as upon these depend the prosperity of commerce and the arts.

This plant, it is pretty generally understood, was first introduced into our country by D. J. Browne, of the Patent Office, who gives a valuable account of it in his Report of 1854. He had previously seen a small field of it growing in France, and being struck with its similarity to our Indian corn, he became convinced that it would flourish where that plant would thrive, and was then led to obtain its seed. From the seeds distributed by the Commissioner of Patents, various farmers have made experiments, and have given the results of their labors to the public, through various periodicals—the SCIENTIFIC AMERICAN among the number. A new pamphlet, by Jas. F. C. Hyde, of Newton Center, Mass., on the subject, presents considerable that is interesting relating to it. He states that although sugar has been, and can be, made from this cane, both in our own country and in France, "the question is, whether it will supersede the old cane in the South, and can be profitably cultivated at the North." In answer to this he advances the opinion, based on his own experiments, that "experience is all that is wanted to obtain sugar from it of the best quality and in liberal quantities," and he is convinced, also, that it is a most valuable plant for other purposes, such as fodder. This seems to be the opinion of every person who planted the seed and made experiments last year; we have not read a single contradiction to such favorable testimony, and this is the reason, we believe, why so many farmers are preparing to cultivate it the next season. We hope they will not get up a Rohan potato and *Maurus Multicaulus* excitement respecting the seed, while it is dear, and pay exorbitant sums to obtain it. Our farmers who cannot obtain the seed at a reasonable price, can afford to wait till it becomes cheaper, and by so doing they will also obtain the experience of those who cultivate it, and this is worth something, as the best method of its cultivation has yet to be learned.

It is to this part which we wish particularly to direct attention at present; those who intend to plant it should understand the best known methods of preparing the soil for its reception, and taking care of the plants. Farmers should first be very careful in obtaining genuine seed of the cane; R. Battey, of Rome, Ga., in a letter in the last number of the *Southern Cultivator*, states that there are several varieties of it, differing widely from one another; and that some samples of this cane, grown last season at the North, and exhibited at various Fairs, are quite different from those grown at the South. The Northern canes were from 10 to 12 feet high, with a pith but very little sweeter than cornstalks, while those grown at the South did not exceed nine feet high, and had a pith as sweet as that of the real sugar cane. He believes that these varieties are due to an admixture of pollen from broom and other corn. The soil should be well plowed, and put into the same mellowed condition as for Indian corn. The seed should be planted at least three feet apart every way, and three dropped into a hill, and they are afterwards to be cultivated exactly like corn. Broom corn *Dourah* corn, and all plants of the same family must not be planted near it, as it is liable to intermix with these, and would thus be ruined for the production of syrup. A small portion of the crop should be reserved for seed, and permitted to stand until fully matured.

If designed for fodder, all the shoots and suckers which spring up from the root, should be permitted to grow; if designed for making syrup and sugar, the hills may be planted more close together, and the seed-heads should be pinched off before they are fully formed. The first care of those who design cultivating it, should be to raise strong and healthy plants for seed, and for fodder, and to make careful experiments as to the best method of developing its saccharine qualities. If it be found that it produces sufficient juice to warrant its cultivation for syrup or sugar, farmers can easily be furnished with machinery for all the manipulations of crushing the cane and boiling down the sap.

The Mechanism of the Eye.

There is a most learned and able article on "The Sight and How to See," in the last number of the *North British Review*. We will endeavor to present an abstract of some of the new and leading ideas embraced in it, they being of deep and practical interest to every human being.

Of all the five senses—seeing, hearing, smelling, tasting, and feeling—by which we acquire our knowledge of the external world, the sense of sight is the most important. The eye surpasses all the other organs of sense in the extent of its range, and it can perceive the rays of light which may have proceeded from a distant star, even after the orb has been blotted out of space. This power of observation does not depend on the magnitude of the eyeball or any of its parts; the minutest animal—requiring a microscope to make it visible—contains the image of the external world painted on its retina as distinctly as that of a man, or an elephant. The human eye has been admired for the beauty of its form, and the range and quickness of its movements; and its varied mechanism has excited the wonder of philosophers. The eyeball is nearly globular, being of a spheroidal form, like an orange—its smallest diameter being that which we direct to objects to see them. It moves in a socket elegantly prepared for its reception, and is lubricated by a peculiar secretion, which entirely removes the friction of its incessant motions. By means of six muscles attached to it, without moving the head, it can direct itself to almost every point of a hemisphere, but with the motion of the head combined, it commands a panorama of everything around it. The ball of the eye, which is about 9-10 of an inch, in diameter, has a tough and opaque external membrane, called the schlerotic coat, which forms the white portion. Into this, and in front of the ball, slightly raised above it, is inserted a circular transparent portion, like a small glass, called the *cornea*. Although it is as transparent as glass, it is, like the schlerotic coat, very tough. It is composed of several firmly adhering layers of equal thickness, and is nearly half an inch in diameter. Within the cornea, and in contact with it, is the *aqueous humor* a transparent fluid. It has the form of a plano-convex lens, the curved side being the inner surface of the cornea, and the plane side the visible surface of the *iris*, which is the colored circular flat membrane, with an aperture in its center called the *pupil*. It has the remarkable property of contracting the size of the pupil from one-fourth to one-eighth of an inch under strong light, and expanding again when the light is diminished. This membrane divides the eye into two very equal parts—the *anterior* and *posterior* chambers. The anterior, which is a front of the iris, contains the aqueous humor; the posterior, behind it, contains the *vitreous* humor, and the crystaline lens. The vitreous humor resembles the white of an egg, fills up a great portion of the eyeball, and keeps it distended, like an india-rubber bag filled with water. It is divided into several cells, the humor occupying each like honey in a honey-comb. The *crystaline* lens occupies the front of the vitreous humor; it is double convex—more convex behind than before—and is placed in a thin bag immediately behind the iris—the pupil or opening of the iris being opposite the central part of the lens.

The *crystaline* lens is a beautiful piece of workmanship. In its perfect state it is transparent as a drop of water, and yet it consists of a great number of coats, like an onion, each coat composed of an immense number of fibers, with teeth on each side like those of a saw—the teeth of one fiber entering into the hollows of the adjacent fibers, so as to bind them together. These fibers are of equal length, taper from each end to their middle, and so combined, that the lens is most dense at its center, and least so towards its circumference. In the crystaline lens, four-tenths of an inch in diameter, of a codfish, there are five millions of fibers, and sixty-two thousand five hundred millions of teeth, exhibiting a mechanism which may well excite the profoundest admiration.

Behind the vitreous humor, and lining the inner surface of the schlerotic, is the *choroid* coat,—a delicate membrane covered on its posterior surface with a black pigment, and immediately within this pigment is the *retina*, the innermost coat of all, and lying next to the vitreous humor. It is a delicate reticulated membrane, consisting of several layers of different structures, the exact use of which has not yet been determined, although the membrane which they form is that which receives the images of external objects, like the gray glass in the camera obscura. A line drawn through the center of the pupil and the crystaline lens, is called "the axis of vision," or the optical axis of the eye, and the extremity of this axis is that point where it touches the retina. About one-tenth of an inch from the extremity of this axis—in a horizontal direction—the retina is slightly raised; this is the place where the optic nerve from the brain enters the schlerotic coat, and expands into the retina. At the extremity of the axis, is a small spot with a yellow margin, which is more transparent than the rest of the retina; this spot exists only in man, monkeys, and some lizards, and is about from the fifteenth to the thirtieth of an inch in diameter.

This general description of the eye and its mechanism shows how wonderfully it is made, and how infinitely it surpasses in delicacy and refinement, the most skillful achievements of men. We leave for our next number a description of the phenomena of vision.

Bronzes.

The manufacture of bronze may be ranked amongst the oldest of the arts. The ancients used a composition of copper, tin, and zinc, adding sometimes a small percentage of silver to improve the appearance and nature of their bronze.

In 1841, M. du Ruolf communicated to the Academy of Sciences, at Paris, a method of forming articles in bronze by the electrotype process—using the double alkaline cyanides of copper and tin. He showed the Society the process, which consisted of simply coating any metal by means of the voltaic battery and the cyanides mentioned—similar to the common mode of electrotyping which is now so extensively practiced in this city. The antique bronze color is afterwards given to the figure by adding to fourteen oz. measures of colorless vinegar two drachms of sal ammoniac, and half a drachm of binoxalate of potash. This solution is to be applied with a hair pencil in a very thin layer, the object having been previously slightly warmed.

There are many different ways of coating common metals with bronze, and goods of this description are coming more and more into general use. We have seen common cast iron so bronzed as to assume a beautiful appearance, and rendering the article impervious to rust in-doors. Spelter forms a good basis, also, to coat upon.

We have seen some fine specimens of American imitation bronze at the office of Jos. G. Gilbert, 46 John street, this city, who is extensively engaged in the manufacture of real and imitation bronze. Statuettes, clock cases candelabras, portable gas fixtures, etc., of very handsome patterns, were shown us at his office; but the most novel of all his curiosities are specimens of insects, toads, plants, etc., which castings are taken direct from nature, he using the animal or plant as the mold, which, of course, renders the production true to life.

The Woodworth Planing Machine Patent.

Special Dispatch to The N. Y. Tribune.

WASHINGTON, Jan. 6, 1857.

"I am able to assure the anxious souls all over the country that the agent and manager of the enterprise for the renewal of the Woodworth Planing Machine Patent has given up the struggle and gone home. It was found impossible to get the bill through either House of Congress. Plenty of Members would have liked to vote for it, but were afraid of their constituents, who take *The Tribune*. Previous, however, to discovering the hopelessness of the scheme, the agent in question had spent ten thousand dollars among the correspondents of various influential and uninfluential newspapers. Bad investment."

We are very much gratified to learn from the above dispatch—which is copied *verbatim* from the *Tribune*—that the manager of this monstrous Woodworth scheme has taken our advice and left Washington in hopeless despair of the success of this project. No thanks are due to the New York daily papers for this glorious result, with the single exception of the *Herald*; and to find the credit thus complacently appropriated to the *Tribune* by this correspondent is about the coolest undertaking we have met with this winter.

On the day previous to the above announcement in the *Tribune*, there appeared in an obscure portion of the paper the following remarks in regard to this scheme:—

"*Woodworth's Planing Machine.*—Has or has not a quarter of a century of monopoly been sufficient to repay the inventor of the Woodworth Planing Machine, who, by the way, has long since died, and left the patent in the hands of his friends, or, rather, in the hands of parties who, whatever their relation to William Woodworth, will prove anything but friends to the industrial interests of the community, if the patent should be again extended? The proposed extension is opposed to the interests of every class using lumber. It is opposed to precedent, to common sense, and to abstract justice. It should be met by unanimous opposition in both Houses of Congress."

These dozen lines, if we remember rightly,—and we have watched the course of the daily papers on this subject with much interest—constitute the sum total of all the *Tribune's* opposition to this stupendous scheme, since this session of Congress began; and to have produced the tremendous consternation among the Members ascribed to its influence, the lines above quoted must have dropped like a bomb-shell upon Congress on the very morning of their appearance. We sincerely hope that the killed and wounded are all properly cared for.

Chinese Potato.—Discorea Batatas.

A circular from Prince's Nurseries, L. I., describes, in glowing language, the excellence of this esculent, stating that it is more nutricious than any other esculent cultivated; that it is perfectly hardy; that its produce is great—about 800 bushels per acre in France—that it is "the greatest vegetable boon granted by God to man," and that its introduction into our country is more important than cotton.

The circular states that the price of 100 tubers is $20—immodestly and immoderately high, we think. We have seen a number of paragraphs by those who had planted this esculent last season, not a single favorable one, we believe, the yield in every instance being poor. In this respect the testimony respecting it is quite contrary to that relating to the Chinese sugar cane.

Application for Extension of a Patent.

F. N. Smith, of Kinderhook, N. Y., has applied to the Commissioner of Patents for the extension of his patent on "Corn Shellers," granted June 1st, 1843. All persons who desire to oppose the extension must file their objections in writing with the Commissioner of Patents before the 18th of May next.

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Patent Cases.

In the U. S. District Court, this city, Jan. 6th, before Judge Hall, the following cases were tried :—

Regulating Fire Dampers by Steam.—The Clark Patent Steam and Fire Regulator Co. against Joseph L. Hews and John W. Phillips.—This was a suit for alleged infringement of a patent issued to Patrick Clark, January 3d, 1854, for an improvement in a machine for regulating the dampers of fires of steam engines by the pressure of the steam, the plaintiffs being assignees of the patent.

The patent describes a peculiar operation of a flexible cylindrical diaphragm, whereby the folds of the diaphragm, as the piston descends upon it, roll up and down within a recess formed between the inner surface of a cylinder and the outer surface of a piston; and the patent claims the diaphragm piston and cylinder in combination for a regulator of the damper to the fire of a steam engine.

The defendants are machinists in Newark, N. J., and were charged with having infringed the Patrick Clark patent by making and using regulators under and according to the patent of Joseph Woodruff, dated October 22d, 1855, and $5,000 damages were claimed.

The defendants alleged that the plaintiffs construed their patent too broadly, and that when construed properly, and according to law, it would be limited to the peculiar operation of the diaphragm in combination with the cylinder and piston, and would not cover the Woodruff machine, which did not employ either a cylinder or the plaintiff's diaphragm, and therefore the defendants had not infringed the plaintiff's patent.

Much testimony was taken on both sides; and after the cause had been on trial four days, the plaintiffs' counsel moved the Court for the privilege of arresting the trial by withdrawing a juror, upon the ground that the plaintiffs had not proved such a case as they were willing to submit to the jury.

This motion was opposed by the defendants' counsel, who desired and insisted in behalf of the defendants that the trial should proceed, and the case be submitted to the jury for final determination.

The Court, having the discretionary power, granted the motion on the plaintiffs paying the defendants' costs of the trial.

This withdrawing a juror is a proceeding substantially the same in effect as submitting to a non-suit, and is frequently resorted to by plaintiffs in a cause where he is afraid to submit his case as proved, to the decision of the jury. For plaintiffs, Francis B. Cutting and Charles M. Keller. For defendants, George Gifford.

Reaping Machines.—Two rather peculiar cases in equity, before Judge Hall, were decided. The parties were George F. Jerome against Jacob Ellison; also George F. Jerome against Walter Skidmore.

The defendants in these cases are agents of Judge Ball, of Rennsselaer County, N. Y., for the sale of the Manny Reaping Machines—Judge B. being one of the proprietors of the Manny patent.

The complainant, G. F. Jerome, claims to be the assignee of certain rights for Long Island, and applied for injunctions to restrain to defendants from selling. On the argument the defendants contended that the complainant, Jerome, was not an assignee of any right under the patents, and that he never had any right to sell the machines except as a mere agent, and that that agency had been revoked, and that he had no power to commence suit.

The Court decided in favor of the defendants in both cases, denying the injunctions. For the complainant, A. L. Jordan and Wm. A. Hardenbrook. For the defendants, Geo. Harding and Geo. Gifford.

File Machine.—In the Supreme Court, this city, January 3d, Judge Roosevelt presiding, a very interesting case relating to the sale of an interest in a patent (a common bargain) was tried. The parties were Dodge against Evans & Davis. This was an action to recover $10,000 with interest from September, 1856, being an amount paid by the plaintiff to defendants for an interest in a patent for improvement in file machinery. The money was paid before the issue of the patent, and plaintiff claims that the patent which proved the consideration was never issued, but that the one subsequently issued was essentially different. Evidence on the point was given by both sides. The defendants likewise claimed that the plaintiff had accepted the patent. Mr. Evans defended the suit. Mr. Dodge did not respond to the complaint. The Court charged that the question was not so much whether the invention was valuable or successful, or not. That question might arise if there was any allegation of fraud, but that was not set up. The sole question was, did Dodge get the thing substantially for which he paid $10,000. Verdict for defendant.

McCormick's Reaper.—In the U. S. Supreme Court, at Washington, D. C., an important decision was rendered on the 7th inst., in the case of an appeal from a decision in the Circuit Court for the Northern District of New York, in a trial at law between McCormick and Seymour & Morgan, for the infringement of the patent of the former by the latter. The verdict awarded high damages to McCormick. From that decision this appeal was carried by Seymour & Morgan. Justice Nelson delivered the opinion of the Supreme Court, affirming the judgment of the Circuit Court of Northern New York, with costs, and remanding the cause with directions to strike from the record the taxation of costs.

English Patent Case.

The last number of the London *Mechanics' Magazine* contains the account of an interesting patent case which was tried before Chief Baron Pollock and a special jury, at Westminster, on the second of last month (Dec.) The parties were Hill *versus* The London Gas Co. The most eminent patent counsel in London were employed. Mr. Knowles, Mr. Grove and Mr. Hindmarch for the plaintiff, and Sir F. Thesiger, Mr. Hill, and Mr. Webster for the defence.

The action was brought for the infringement of a patent for "a new mode of making gas and for obtaining substances applicable to the purifying of gas." The defendants rested their case on the ordinary pleas, denying the novelty of the patent, its utility, and the infringement.

Mr. Hills, who carries on chemical works at Deptford, applied himself to the subject of gas making and purifying in 1849, and, after many experiments, succeeded so far as to induce him to take out a patent in November for making gas from peat and other substances, and for discovering new substances for its purification. In due course a specification was enrolled, from which it appeared that he proposed to substitute hydrated oxyd of iron, mixed with sawdust, for lime, as a purifier, while he pointed out that this substance, when saturated, was capable of being renovated by exposure to the air, by which means all the sulphur was eliminated from the iron, so that the whole process was both effective and economical. This new process found great favor with the gas companies, and many used it, paying the plaintiff a royalty; but the defendants having claimed to use it without any recognition of the plaintiff's rights, this action was brought, but not until the plaintiff had disclaimed a great part of his patent, confining his title and specification to a new mode of manufacturing gas, and the renovation of the substances as above-mentioned.

On the part of the defendants it was contended that the patent of the plaintiff was based upon and identical with that of Mr. Croll, which had been taken out in 1840; that the use of hydrated oxyd of iron was public before 1850, the date of the plaintiff's patent; and the discovery of the revivifying effect of the atmospheric air on the "used up" hydrated oxyd of iron was attributable, not to the plaintiff, but to the observation of a gentleman named Evans, who being engaged in experiments with hydrated oxyd of iron had casually noticed the change of color produced on a mass of that substance, which had been thrown aside as too greatly charged with sulphur to be further used. This change of color proved, on examination that the air had expelled the sulphur and renovated the purifying powers of the substance—a fact which was disclosed to the plaintiff himself and to the Chartered Gas Company by Mr. Evans before the plaintiff had enrolled his specification. On these grounds the plaintiff's claim to the of an title inventor and protection of the law was disputed. In the course of the trial the chief chemical talent of the day, beginning with Professors Taylor and Brand, were examined on one side or the other.

At the conclusion of the evidence given on behalf of the defendants, the Chief Baron stated that, in his opinion, the plaintiff had failed to support his patent; and after a lengthened discussion it was arranged that the plaintiff should be non-suited, with a reservation for the consideration of the Court above, and power to either party to tender a bill of exception to its judgment. The plaintiff was thereupon called and non-suited.

Telegraphic Insulation.

MESSRS. EDITORS.—"The Vermont Central Railroad Co, has at Northfield an extensive apparatus for 'Burnettizing' ties, bridge timber, &c. Many thousand ties preserved in this manner were laid down four years since upon their roads, and, as yet, exhibit not the least signs of decay. Our Telegraph Company has had some poles so prepared this season, by way of experiment. The expense does not exceed sixteen cents each.

It is beginning to be felt that telegraph lines, to pay, must be substantially and reliably built. There is an increasing demand by companies for the most durable kinds of timber, and I doubt not that the Burnettizing, or some other process for its preservation will, at no great distance of time, be generally adopted."—[Correspondence of the SCIENTIFIC AMERICAN, Oct. 13th, 1856.

I had intended, upon seeing the above pubcation, to offer some some views upon the subject of Burnettizing (charging with chloride of zinc) so far as telegraph poles are concerned.

It is most true that too little attention has heretofore been paid to the durability of our telegraphic structures, and the result now is that the entire earnings of most of our lines are consumed in patching up hastily and ill-built affairs.

Still, in proposing now to apply a remedy, should not care be exercised that we do not lose as much or more in other things than we gain in stability? In the construction of a railroad, durability is a very great object, as it also is in that of a telegraph; but we must remember that the subtle element, electricity, is very prone to "get off the track" whenever there is the least faulty insulation.

It would really seem that what would be gained by the Burnettizing process in durability would be more than lost by the increase of conductability of the timber. I have no means at hand by which to assert how much the conductability of the poles would be increased by charging them with chloride of zinc, but the increase would be considerable. Everything tending in this direction should be carefully avoided, for it is a fact well known by those practically connected with telegraphing, that there are but few lines in the country that can be operated successfully through most states of the weather in a circuit of two hundred and fifty miles, and that this inability arises from defective insulation.

Now, if it cost but sixteen cents per pole to charge with chloride of zinc, how much would it cost per pole to charge with resin? If the resin be melted to a thin state, and the pole immersed in it, and the vessel be such an one as that the air could be exhausted, would not the pores be completely filled. Resin is well known to be one of the best non-conductors, and it would appear that by this means the whole pole would be converted into an insulator of a considerable degree of excellence, which, if the pole be twenty-five feet in length above ground, would be so many feet of insulating substance added to the glass, as already used. It should be borne in mind that the purest resin, free from all the oil of turpentine, should be used, as the turpentine contains sufficient of a vegetable acid to make it quite a good conductor, as was thoroughly exemplified in an instance near Baton Rouge, La., where the wire of the line being in contact with a nail at the top of a post, and the nail passing through some turpentine, which had exuded from and run down the pole, and connected with the ground. The working of the line was almost completely interrupted for weeks, and the most vigilant police failed to discover the cause until, upon raising the wire from contact with the nail and turpentine, the difficulty ceased.

Another apparent sacrifice of insulation to durability would seem to be in the use of iron holders for the glass insulators. A hole is bored through the pole, into which the shank of the iron holder is driven, and in the other end of the holder is placed the glass upon which the wire is to lie. This glass often breaks, and the wire rests upon the iron. Capillary attraction draws the juices of the earth with metals and acids in solution, up directly in contact with the iron shaft, and thus are ormed so many partial ground connections as there are pores in the pole that terminate in contact with the iron. Even if the glass be not broken, whenever there is rain or a damp atmosphere, the moisture collected on the surface of the glass serves to connect the wire with the iron holder.

A glass insulator can be so arranged and introduced into the pole as to have all the strength required by the use of iron holders and at the same time be secured from breaking under any circumstances. I have become satisfied, from my experience, that the use of any iron whatever in connection with insulation is injurious.

The line built between Pittsburgh, Pa., and Louisville, Ky., known as the "O'Reilly line," five hundred miles in length, was insulated solely with large glasses; and having operated for a length of time upon that line immediately after its erection, I found it by far the most perfectly insulated line I have even seen operated.

The water that collects upon the surface of poles in rainy or damp weather acts also to convey away a part of the current. It has occurred to me that if the upper end of the pole—say for two or three feet—were smalted with some fine sharp sand, caused to adhere by having first varnished the pole with a solution of gum shellac in alcohol, the continuity of the surface of the water would be broken, and the sand at the same time would be a non-conductor. E. F. BARNES.

Brooklyn, N. Y., Jan., 1857.

Niagara Railway Suspension Bridge.

On page 134, SCIENTIFIC AMERICAN, it was stated that the strength of the Suspension Bridge, at Niagara Falls, was severely tested by a gale on the evening of the 13th ult., "that the toll-gatherers deserted their posts at either end, and crowds assembled to see it fall, but it stood like a rock."

In reference to this statement we have received the following communication:

MESSRS. EDITORS.—It is not true that the Suspension Bridge had a severe test at that time.

It is not true that the toll-gatherers deserted their posts.

It is not true that crowds assembled to see it fall, except the correspondent of the *New York Herald*, from Clifton.

WM. G. SWAN, Supt.

Niagara, Jan. 7, 1857.

[The statement referred to by Superintendent Swan, was a common piece of news, promulgated through the daily papers, and believed generally to be truth. There was nothing in the statement apparently malicious, or got up for any particular purpose. What motive could any person have for coining such a lie for publication? The correspondent of the *Herald*, according to the statement of Mr. Swan, we think, must be a *small* fellow, exceedingly *numerous* in himself.

Great Bridge.

A bridge is now being built across the Upper Mississippi, at St. Paul, Minnesota. It is to be 1,300 feet in length, resting upon nine piers, the highest of which are seventy feet above high water mark, so as to enable boats to pass under without difficulty. The greatest span will be two hundred and twenty feet; sufficiently wide to allow the largest rafts to pass without coming in contact with the abutments. The whole cost of the work will be near $120,000.

Hydrophobia has never been known to occur in Egypt.

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G E. of N. Y.—Apply to Emery & Co., of Albany, N. Y. for a good corn sheller.

S. D. McC., of Ky.—The same machinery that is employed for pressing linseed to extract the oil, will answer for pressing mustard seed for the same purpose.

L. S. U., of Tenn.—The blue color on steel is produced by the heat to which it is submitted after being polished. The other colors to which you refer are put on with bronze powders. You cannot remove the little spots to which you refer in optical glasses; they are imperfections in the glass. The cost for infringing the patent to which you refer would be the full price of each article sold. All the lenses to which you refer are made of glass; the different names given them are for the purposes of sale. We may yet give you more information on glass-making. You mention that you have 100,000 plants coming from Arabia which are true barometers, and desire to know how you shall sell them. We recommend you to sell as many as you can at private sale, and the balance at auction. These are the only means we know of by which property can be legitimately sold.

W. H. D., of Mass.—Your raft for saving life at sea is good and practicable, but not new. You can find a similar raft illustrated on page 113, Vol. 4, Glasgow Mechanic's Magazine, 1825.

J. B., of Iowa.—We have given the rule in former volumes for calculating the horse power of non-condensing engines, but for your special benefit we will give it again. Multiply the pressure of steam in lbs. on each square inch of piston area into the velocity of the piston in feet per minute, and divide by 33,000, and the result is the horse power. Deduct one-fourth of the amount for friction.

H. B., of Conn.—We fear that the improvements in your gauge, described in your letter of January 4th, are not patentable. The use of a reflector to throw light on the index is certainly not patentable, and we do not think that any claim would be allowed on the lip of the plate.

John Brunson, of Cedar Falls, N. C., wishes to procure the most approved lathe for turning spokes.

G. F. L., of Mass.—Black-lead and some lampblack incorporated with fresh butter or boiled sweet oil, is employed for making copying paper of manifold writers. The paper is exposed in a warm apartment for some days after it is put on. Common sun-flower stalks will make paper; but we do not advise you to commence its cultivation for this purpose.

S. N. M. of Mass.—We do not discover any patentable novelty in your boiler and heater arrangement. The idea of drawing the products of combustion and heated air from a boiler furnace, through the flues, by a fan, and forcing them into the chimney, is old, and so is the idea of heating the feed water by running flues throughit.

L. W. of Vt.—There is nothing new in the form of the main valve and seat of your oscillating engine, but we think a patent might be secured on the cut-off. There is a rejected application in the Patent Office, which describes a mode of shifting the eccentric by means of bevel gearing, and an endless screw, like the one you describe. It was rejected on account of something described in an English work. We think, however, that your device for preventing the eccentric or cam moving too far back is patentable. But this could not be included in the same patent as the cut-off. Separate applications and separate models would be necessary.

C. D. of N. J.—We have no doubt but a body passing rapidly in a circular path, in a resisting medium, would be rotated on its axis. You have no idea of the vast number of articles we have received on the Moon's rotation.

J. M. of Ind.—There is no cement capable of cementing iron and wood together, so as to unite them firmly.

L. A. B. V. of C. E.—Use hot water, it will leach wood ashes more perfectly than cold; this is the only improvement we can recommend in leaching the ashes to make potash.

A. H. of Vt.—We can furnish you with a copy of Geo. Page's claims on portable saw mills for $1. This will enable you to understand exactly the full scope of his patent.

H. K. N. of Ark.—From your description we cannot understand how you intend to construct the hopper of the cotton press. Lever and cog wheel presses for pressing hay and other articles, are as common and well known as screw presses.

D. G. C. of Me.—In Clarke's work on the Locomotive, published by Blackie & Son, Fulton street, this city, there are drawings of all the parts of locomotives.

G. McL. of Ind.—We cannot give you the information requested.

J. H. G. of O.—Your statement that the train which was run into at Alliance had been put in motion, and had moved a little further from where it had stopped than the length of the train, makes the case much worse on the part of those who had charge of the train that was smashed. The train seems to have been started across the track for the very purpose of courting an accident. We have no desire, however, to take sides in the matter, and hope the affair will be amicably settled to the honor and for the interests of all concerned.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, Jan. 10, 1857:—

H. J. & Co. of N. Y., $250; M. B. of Ill., $25; S. G. T. of O., $25; O. C. of Ill., $25; E. W. & Co. of N. Y. $100; T. H. S. of N. Y., $30; H. & A. of Ind., $27; A. C. of Mass., $20; H. H. of Mass., $25; T. L. of Pa., $30; W. H. McN. of N. Y., $15; J. F. A. of N. Y., $30; T. J. M., of N. Y., $25, H. C. W. of N. Y, $25; D. B. of N. Y., $25; S. L. Jr. of Ind., $20; S. B. D. of N. Y., $260; W. T. of Mass., $30; M. L. of Mass., $30; T. J. Y. of Ala., $10; A. C. B. of Ala., $30; J. R. of Scotland, $530; E. G. of Germany, $325; P. O'R. of R. I., $30; A. C. of N. H., $30; C. J. of R. I., $60; A. W. of N. Y., $25; C. R. of O., $30; M. & P. of Ky., $30; J. H. of Ind., $55; W. P. C. of O., $30; L. & L. of Ind., $25; T. J. W. of Conn., $20.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Jan. 10 1857:

A. C. of Mass.; M. B. of Ill.; L. & A. of Ind.; K. & L. of Mich.; A. C. of Ill.; E G. of Germany; S. L. Jr. of Ind.; H. C. W. of N. Y.; D. B. of N. Y.; T. J. M., of N. Y.; C. W. A. of Mass.; S. B. D. of N. Y.; C. B., of L. I.; A. W. of N. Y.; L. & L. of Ind.

Important Items.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure but no name of State given, and often with the name of the post office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post office at which they wish to receive their paper, and the State in which the post office is located.

FOREIGN SUBSCRIBERS—Our Canada and Nova Scotia patrons are solicited to compete with our citizens for the valuable prizes offered on the next volume. [It is important that all who reside out of the States should remember to send 25 cents additional to the published rates for each yearly subscriber—that amount we are obliged to pre-pay on postage.]

COMPLETE SETS OF VOLUME XII EXHAUSTED.—We regret that we are no longer able to furnish complete sets of the present volume. All the back numbers except 1, 2, 6, 9, 10, 11, and 13, we can yet furnish, if new subscribers desire to commence back to the beginning of the volume; but unless they specially request to the contrary when making their remittance we shall commence their subscription from date of receipt of the order.

INVENTORS SENDING MODELS to our address should always enclose the express receipt, showing that the transit expenses have been prepaid. By observing this rule we are able, in a great majority of cases, to prevent the collection of double charges. Express companies, either through carelessness or design, often neglect to mark their paid packages, and thus, without the receipt to confront them, they mulct their customers at each end of the route. Look out for them.

PATENT LAWS AND GUIDE TO INVENTORS.—This pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office. Price 12 1-2 cents per copy. A Circular, giving instructions to inventors in regard to the size and proper construction of their models with other useful information to an applicant for a patent, is furnished gratis at this office upon application by mail.

RECEIPTS—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office stating the name of the patentee, and date of patent when known, and enclosing $1 as fee for copying.

Terms of Advertising.

Twenty-five cents a line each insertion. We respectfully request that our patrons will make their advertisements as short as possible. Engravings cannot be admitted into the advertising columns.

☞ All advertisements must be paid for before inserting.

IMPORTANT TO INVENTORS.

THE UNDERSIGNED having had TEN years' practical experience in soliciting PATENTS in this and foreign countries, beg to give notice that they continue to offer their services to all who may desire to secure Patents at home or abroad.

Over *three thousand* Letters Patent have been issued, whose papers were prepared at this Office, and on an average *fifteen*, or *one-third* of all the Patents issued each week, are on cases which are prepared at our Agency.

An able corps of Engineers, Examiners, Draughtsmen, and Specification writers are in constant employment, which renders us able to prepare applications on the shortest notice, while the experience of a long practice, and facilities which few others possess, we are able to give the most correct counsels to inventors in regard to the patentability of inventions placed before us for examination.

Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patents present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the SCIENTIFIC AMERICAN. This paper is read by not less than 100,000 persons every week, and enjoys a very wide spread and substantial influence.

Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that a very large proportion of all the patents applied for in the U. S., go through our agency.

MUNN & CO.

American and Foreign Patent Attornies, Principal Office 128 Fulton street, New York.

SEE HERE!—Any one who will pay the expense of procuring a patent on the simplest Marine Governor ever invented, can have half the interest in the right; they can be made and applied to any steam vessel in use for $50. The same is offered of an improved hand corn-planter, which can be made for 75cts. a-piece. Both said to be patentable by the editors of this journal. For particulars address JOHN DECKER, Sparta, Sussex Co., N. J. 1*

TRUSTEE'S SALE OF MACHINERY.—One 25 ft. Planer, two 12 ft. do., two 10 ft. do., three 9 ft. do., four 8 ft. do., five 6 ft. do (new.) One 12 ft. Lathe, nine 8 ft. do., twelve 6 ft. do.; 6 Hand Lathes; 2 Gear Cutters, 3 Upright Drills, 1 Bolt Cutter, 1 Shaft Straightener, Planer, Centers, Chucks, &c. 4 sets 28 in. swing heads, counter shaft, and carriages; 4 sets 12 feet cross-heads; Planer and Lathe Patterns, and all kinds of small tools used in a machine shop. To be sold cheap for cash, said machinery is in good order. N. D. SPERRY, Trustee of the Estate of John Parshley.
New Haven, Conn., Jan. 2, 1857. 19 4

THE BEST PLANING MACHINE IN THE WORLD.—Patented Nov. 21, 1854, and Nov. 13, 1855. These patents were obtained for improvements upon the celebrated Woodworth Planing Machine, the patent for which expired Dec. 26, 1856. By the combination of these several inventions a machine is produced of unrivalled excellence. A Gold Medal for this invention was awarded by the Mass. Char. Mech. Asso., at their Exhibition of 1856. Machines of all kinds and sizes, from $150 to $2000. All machines warranted to give entire satisfaction, and to be superior to any other machines now in use. For further information address the patentee. JAMES A. WOODBURY,
1* No. 1 Scollay's Building, Court st., Boston, Mass.

IN my advertisement in SCI. AM. of Dec. 20th, instead of 10, read 3 postage stamps. B. T. MONTAGUE. 1*

ACHROMATIC MICROSCOPES.—The advertiser having worked for the most eminent London Opticians for ten years, is prepared to supply microscopes of the finest construction, at reasonable prices, either on Andrew Ross's, Powell & Lealand's, or Smith & Beck's patterns. The Student's Microscope, with one quarter and inch objectives, and two eye-pieces, $30. Manufactory at A. F. EDEN'S, No. 1 Front street, Brooklyn, near Fulton Ferry. 1*

WOODWORTH'S PATENT PLANING, Tonguing, and Grooving Machines.—The subscriber, from his twenty-four years' experience both in the use and manufacture of these unrivalled machines, is prepared to furnish them of a quality superior to any that can be procured elsewhere for the same money. Prices from $85 to $1550. Also several good second-hand Planing, Tonguing, and Grooving Machines for sale.
JOHN GIBSON,
19 12* Planing Mills, Albany, N. Y

TO ARCHITECTS—A premium of $250 will be paid for the best, and one of $100 for the second best plan, with specifications, for the college edifice for the New York State Agricultural College, to be built at Ovid, Seneca county, the coming season. There will be required a Culinary Department, in all its details, a Dining Hall and Laundry, to accommodate from 300 to 400, a Lecture Room, capable of seating 400 to 500, and accommodations for the steward and his family in the basement. In the first story will be required a President's Reception Room and an Office, five Professors' Rooms, five Recitation Rooms, a Library, and a Chemical Laboratory large and well lighted. The residue of the first and the three stories above, to be appropriated for Students' Rooms or Dormitories, not less than 175 in number, and not less than 16x10 feet in size, with a bed-room connected; the rooms lighted with one large window; halls not less than 10 feet in the clear, with stairways to approach them. Building to be four stories above the basement. Plans for heating, ventilating, and lighting in the most approved modern manner will be expected. The walls to be of stone or brick. If of stone, to be laid in courses rough hammered, corners suitably dressed, water tables, window caps and sills, cut; stone delivered on the spot for about $2 50 to $2 75 per cubic yard, mainly shaped for laying. Cut stone a higher price. A suitable front doorway of stone, with a cap of suitable depth to receive an appropriate design, with stone steps to reach it; all to be done in a plain, but neat and substantial manner, and with the strictest economy. Cost to be estimated. Plans and specifications to be completed and sent to J. P. Johnson Esq., State Agricultural Rooms, Albany, N. Y., on or before the 10th of February next. The subscriber may be referred to, if desired, at Waterford, Saratoga county, N. Y. S. CHEEVER, President.
December 22d, 1856. 18 5

CRIDGE & WADSWORTH'S IMPROVED Oscillating Steam Engine. Patented December 12th, 1854. After a thorough practical test for about two years of the above improvement, our success warrants us in inviting the closest examination into its reputation in our own locality, and the great popularity of our engines in the midst of the most active and intelligent competition. To engine builders and capitalists we present the following considerations. An engine unsurpassed for durability, compactness, and simplicity, cutting off the steam close to each end of the cylinder, by means of a side pipe, adjustable by set screws, securing a perfectly steam-tight valve with little or no friction or pressure, combining all the advantages of a double slide valve engine, and at the same time dispensing with all cams, cam-rods, cross-heads, rock-shafts, slide-valves, etc., saving their cost of construction and necessary waste of power in running. And finally, we present an improvement (applicable to all cylinder engines) which enables the manufacturer to construct them at one half the cost of any other engine of the same value. This last consideration commends it to the immediate and earnest attention of all persons interested or engaged in manufacturing engines. Believing that the improvement is destined to revolutionize this branch of manufacture, we have decided upon selling such a number of shop rights as will introduce it into general use, and at the same time secure the persons purchasing against too much competition with each other, and on such terms as will bring it within the reach of all in moderate circumstances. Letters of inquiry in regard to terms, addressed to the undersigned, will meet with prompt attention. For explanations see No. 11, Vol. 12, SCI. AM. CRIDGE, WADSWORTH & CO., Pittsburg, Pa. 18 6

THE ILLUSTRATED ANNUAL REGISTER of Rural Affairs, and Cultivator Almanac for 1857. Embellished with one hundred and forty-two engravings and containing one hundred and forty-four large duodecimo pages. By John J. Thomas, author of the American Fruit Culturist, Farm Implements, etc. Price 25 cents. Sent prepaid by first mail by FOWLER & WELLS, No. 308 Broadway, New York. Numbers 1 and 2, for 1855 and 1856, are for sale at the same price, and are still as valuable as when they first appeared. The three together, sent for 75 cents, contain 450 engravings, and 432 pages. The very best thing of its size and price. 18 2

GAS WORKS FOR VILLAGES—As now erected by "The Aubin Gas Works Co," are warranted to possess the following advantages over coal gas works, to wit:—from their great simplicity of construction and operation, both their first cost and daily expense for attendance are much less. They are not exposed either to fire or explosion. They are guaranteed not to create offensive and unhealthy odors in generating the gas. They can be operated days only, or continuously as required. The peculiar construction of the Compound Generator, (a recent invention of Mr. Aubin,) exposes to destruction from the fire, only a movable bottom, and which can be replaced in half an hour; the cost of repairs, therefore, is trifling. Lastly the cost of generating the gas is less. For the above reasons the Aubin Works can be used as well for one or more squares in cities or villages, large private establishments, &c., as for places where the consumption of light is large. For either use their superiority can be proved by their operation (with a generating capacity equal to 40,000 feet of coal gas per day) at Cohoes Falls, N. Y. For further information and reference apply at the offices of the Co., No. 358 Broadway, N. Y., and H. Q. HAWLEY & Co., Albany, N. Y. 17 4

ENGRAVING ON WOOD and MECHANICAL DRAWING, by RICHARD TEN EYCK, Jr., 123 Fulton street, N. Y., Engraver to the Scientific American. 16tf

COMMERCIAL AGENTS, able and honest Men from N. England or N. York. A. W. Harrison, Phila. 16 13*

ST. CLAIR CAR MANUFACTORY—St. Clair, Schuylkill Co., Penn. Coal and freight cars of every description. Workmanship and material guaranteed equal to any manufactured in the United States. Bush & Lobdell's celebrated wheels used exclusively. CHAS. R. ABBOTT, Proprietor. 9 12*eow

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description, Broker in steam vessel-, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Guage, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, Machinery Oil of the most approved kind, etc.
CHARLES W. COPELAND,
1 eowtf Consulting Engineer, 64 Broadway.

A NEW AND SCIENTIFIC INVENTION—Dr. Cheever's Galvano-Electric Regenerator. Patent issued Jan. 15th, 1856. A circular relating to the use of the instrument, embracing a general treatise of atony of the spermatic organs, the result of which tends to softening the medullary substance of which the brain is composed, may be had gratis, and will be sent to any address by mail by their indicating a desire to receive it. All letters should be directed to DR. J. CHEEVER, No. 1 Tremont Temple, Boston. 15 4eow*

MACHINERY—S. C. HILLS, No. 12 Platt street, N. Y., dealer in Steam Engines, Boilers, Planers, Lathes Chucks, Drills, Pumps; Mortising, Tenoning, and Sash Machines, Woodworth's and Daniel's Planers; Dick's Punches, Presses, and Shears; Cob and Corn Mills; Harrison's Grist Mills; Johnson's Shingle Mills; Belting, Oil, &c. 2 e3w

RECIPE FOR MAKING HONEY as good as that made by bees, and which does not cost over six cents per pound, sent for one dollar. N. R. GARDNER, Peace Dale, R. I. Any paper giving this advertisement three insertions, and sending a copy of it, will receive the recipe free. 18 5*

WOOD SAWING MACHINES ALL COMplete for $60. Two men and a single team will average from the log two cords of stove or railroad wood per hour. Machines constantly on hand, and can be shipped to any station. Weight from 800 to 1,000 pounds. Orders solicited. All letters of inquiry answered promptly. Address, LAKE & KNIBLE,
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LANE & BODLEY'S POWER MORTISING and Boring Machine has been nearly four years in the market, and is unequalled for the lightest and heaviest work, on framing or hubs. Six sizes manufactured. For prices and minute description, address LANE & BODLEY, Cincinnati, O. 16 4*

BARREL MACHINERY—CROZIER'S PATENT —This machinery was awarded a gold medal at the late Fair of the American Institute. One set of these machines, driven by 12-horse power, and with the assistance of 20 men make an average of 600 barrels per day of 10 hours, as our factory in Oswego, N. Y. A portion of the machinery may be seen at Messrs. Leonard & Wilson's, 60 Beaver st., New York, to whom reference may be made. For machines and rights address,
WELCH & CROZIER,
15 10* Oswego, N. Y.

NOTICE—I will receive applications until the 1st of June for the right to make and sell my patent Double-Jointed Buckle, the best yet invented; one answering for the whole wardrobe; and will last to the third and fourth generation, if well made. Address,
WILLIAM SLADE,
15 7* Gum Creek, Dooly Co., Ga.

THE PATENT EMPIRE POWER LOOMS for high speed, increased production of cloth, economy in operating, and superior make, are manufactured at the Empire Loom Works, Stockport, Columbia county N. Y. W. BENJAMIN & CO.,
14 8* No. 7 Whitehall st., N. Y.

WRIGHT'S PATENT SECTIONAL SPRING BED BOTTOM—The cheapest and most perfect article in use. LIPPINCOTT & CO., Manufacturers, No. 1180 Broadway, N. Y. 10 3m*

JAMES O. MORSE & CO., 79 John street, N. Y. (between William and Gold streets,) Manufacturers and Dealers in all descriptions of Pipes for Steam, Gas, and Water, together with every variety of fittings for the same; Steam Boilers and Boiler Flues, Stop Valves and Cocks, Steam Whistles, Oil Cups, Gauge Cocks, Governor Valves, Steam and Water Gauges, Steam, Power, and Hand Pumps, Steam Apparatus for warming buildings, Gas Apparatus for towns and factories. 17 13

RUNYAN & HOSTER, of Seneca Falls, Seneca County, N. Y., are now prepared to fill orders for any or all sizes of Lewis' Improved Direct Double-Acting Force Pump, the best pump in use. A full description of it may be found in the Scientific American of March 22d, 1856. Rights are also offered for sale by States or otherwise. R. & H. refer to J. T. Miller, Esq., P. M., Seneca Falls, N. Y. 13 12*

STOVE POLISH—The best article of the kind yet invented for family use. Sold wholesale and retail at 114 John st., New York, by QUARTERMAN & SON. 12 tf

30 HORSE STEAM ENGINE—At the Crystal Palace, called the "Endeavor," the best engine ever exhibited by the American Institute; will be sold low if applied for immediately. S. C. HILLS,
10tf 12 Platt street, N. Y.

CAST-STEEL WIRE DRAWERS—Union Works, Patterson, N. J. Orders solicited and punctually filled by CHAMBERLIN & CO. 14 8*

WOODWORTH'S PATENT PLANING MAchines—Patent expires Dec. 27th, 1856. Machines constantly on hand, together with steam engines and boilers of all sizes. Lathes, planers, drills, circular saw mills, belting of leather and rubber of the best quality. Orders respectfully solicited at the Machinery Depot, 163 Greenwich st., N. Y. A. L. ACKERMAN. 13 8

FORBES & BOND, Artists, 89 Nassau st, N. Y., Mechanical and general Draughtsmen on wood, stone, &c

LAP-WELDED IRON BOILER TUBES.—Prosser's Patent.—Every article necessary to drill the tube-plates, and set the tubes in the best manner.
18 tf THOS. PROSSER & SON, 28 Platt st., N. Y

PAGE'S PATENT PERPETUAL LIME KILN, will burn 100 barrels of lime with three cords of wood every 24 hours; likewise my coal kiln will burn 150 bushel with 1 tuh bituminous coal in the same time; coal is not mixed with limestone. Rights for sale.
45 26 C. D. PAGE, Rochester, N. Y.

50 STEAM ENGINES—From 3 to 40-horse power also portable engines and boilers; they are first class engines, and will be sold cheap for cash. WM. BURDON, 102 Front st., Brooklyn. 14 tf

GOLD QUARTZ MILLS of the most improved construction; will crush more quartz and do it finer than any machine now in use, and costs much less. WM BURDON, 102 Front st., Brooklyn. 14 tf

OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer.
F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe. 14 tf

NORCROSS ROTARY PLANING MACHINE.—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an infringement of the Woodworth Patent.
Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
Office for sale of rights at 27 State street, Boston, and Lowell, Mass. 45 6m*

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters Chucks &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co., New Haven, Conn. 14tf

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.—A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn. 14 tf

BOILER INCRUSTATIONS PREVENTED—A simple and cheap condenser manufactured by Wm. Burdon, 102 Front st., Brooklyn, will take every particles of lime or salt out of the water, rendering it as pure as Croton, before entering the boiler. Persons in want of such machines will please state what the bore and stroke of the engines are, and what kind of water is to be used. 14 tf

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Science and Art.

Asafetida.

This plant is found in the greatest abundance in the Persian provinces of Khorhassan and Laar, and thence extends on the one hand into the plains of Toorkistan, upon the Oxus, where it seems to have been met with by Sir Alexander Burnes, and on the other, stretches across from Beloochistan, through Candahar and other provinces of Affghanistan, to the eastern side of the valley of the Indus in Astore. Dr. Falconer did not meet with it in Cashmere. It is collected in its wild state and sent to Cabul and India, yielding a good profit to those who pick it, as it is used very generally throughout the East.

Although these fetid gums are now branded with all sorts of vile names for their offensive odor, yet they were in high repute among the ancients, asafetida being reckoned one of the most agreeable seasonings for food, and highly esteemed for its medicinal uses, so that it was worth its weight in silver.

A stalk of the plant was sent to the Emperor Nero, and yearly to Apollo of Delphos, as more precious than the other productions of the earth, inasmuch, that "he is worthy of silphium," passed into a proverb—silphium being one of the names by which it was formerly known. Even in the present day, the Persians and other Asiatics flavor their food with asafetida, and term it the food of the gods. Tastes, we know, differ, for by some, garlic is highly esteemed, while others detest its flavor. Asafetida ranks high in the Materia Medica of the Chinese physicians. It forms an important article of trade in the East. The vessels that carry it to the Chinese ports from Bombay, are so imbued with the odor, that they spoil most other goods.

The Norwegians use it with their native brandy as a cure for numerous ills; and many persons in our own country carry it about their persons to smell of it frequently as a preventive of epileptic fits.

The Prism of Odors.

There are certain odors which, on being mixed in due proportion, produce a new aroma, perfectly distinct and peculiar to itself. This effect is exemplified by comparison with the influence of certain colors, when mixed, upon the nerve of vision: such, for instance, as when yellow and blue are mixed, the result we call green; or when blue and red are united, the compound color is known as puce or violet. Jasmine and patchouli produce a novel aroma, and many others in like manner; proportion and relative strength, when so mixed, must of course be studied, and the substances used accordingly. If the same quantity of any given otto be dissolved in a like proportion of spirit, and the solution be mixed in equal proportions, the strongest odor is instantly indicated by covering or hiding the presence of the other. In this way we discover that patchouli, lavender, neroli, and verbena are the most potent of the vegetable odors, and that violet, tubereuse, and jasmine are the most delicate.

Many persons will at first consider that we are asking too much, when we express a desire to have the same deference paid to the olfactory nerve as to the other nerves that influence our physical pleasures and pains. By tutoring the olfactory nerve, it is capable of perceiving in the atmosphere matter of the most subtle nature; not only that which is pleasant, but also that which is unhealthy. If an unpleasant odor is a warning to seek a purer atmosphere, surely it is worth while to cultivate that power which enables us to act up to that warning for the general benefit to health. SEPTIMUS PIESSE.

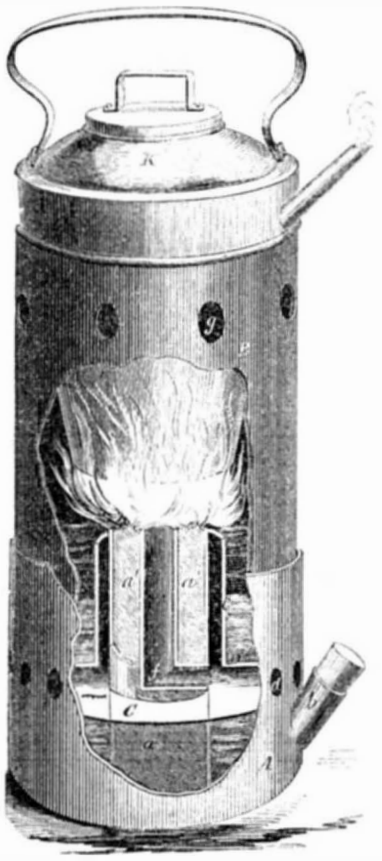
Bones as Manure.

When bone-dust, such as is commonly employed as manure, is left for some time in contact with water, and the latter is filtered away, it is found to contain appreciable quantities of the phosphates of lime and magnesia. The same result is obtained when the water is freed from carbonic acid by long boiling. By filtering water for months through the same mass of bone-dust, it was found constantly to contain these earthy phosphates, and their quantity even appeared to increase in proportion as the organic matter of the bones became putrid in consequence of its long contact with water and air, and the water flowing off became turbid and offensive. This fact seems to have some practical value in agriculture, as it shows that, without any artificial preparation, the earthy phosphates may be extracted from the bones and introduced into the soil in a state of solution, perhaps exactly in the quantity necessary for their appointed functions, and that in the employment of bone-dust as manure, all the preparation necessary is perhaps to lay it in heaps during the summer, and keep it constantly moist.—[Prof. Wohler in Liebig's "Annalen," 1856.

Portable Alcohol Stove.

This figure is a perspective view—partly in section—of a very convenient portable alcohol stove or furnace, for which a patent was issued to Thomas G. Clinton, M. D., Washington, D. C., on the 25th of November last.

This stove is composed of two distinct pieces, exclusive of the kettle represented. The first piece, A, is the lamp, or it may be termed the alcohol furnace. It contains the alcohol, which is poured in by a spout, *b*. It has a central argand, or double tube, extending down into the alcohol through a cover at C. This double tube has raw cotton wicking set in it at *a' a'*, to take up the alcohol, and supply it to the flame by capillary attraction. D is another sheet or cover surrounding the wick tube, forming an air chamber between D and C. The air passes into this chamber through the holes in the case of lamp A, then up through an annular issue in a thin stratum around the argand tube, *a'*, and the tube, *e*, also into the center opening of the tube at *f*, thus distributing the air to the inside and outside of the flame.



B is the second part of this portable stove. It is simply a flue like a quarter joint of sheet iron stove-pipe. It fits into the case of lamp A, resting on the sheet or division plate, D. It has holes in it near the top, to permit the products of combustion to escape. K is a kettle set into the sheet iron flue, E, which flue is set on some water placed on the top of sheet D.

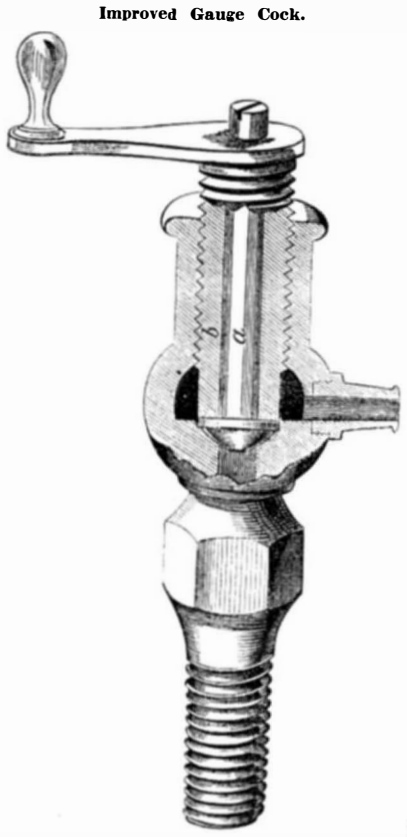
This apparatus is very simple, convenient, and complete in itself for various purposes. It is represented in the engraving as heating water in a kettle; but a frying pan may be substituted for the kettle, to cook meat; or a small baker for baking bread, or tea biscuit.

More information may be obtained by addressing Dr. Clinton, at No. 486 Seventh st, Washington, D. C.

Nineveh Curiosities.

Prof. Hitchcock, of Amherst College, has received a collection of curiosities from old Nineveh. It contains some fine things, among which is a King, seven feet high, leaning on his sword and offering incense. A gentleman of Amherst has agreed to build a Nineveh Gallery next spring, large enough to hold all the College specimens, arranged, as far as possible, as they were upon the walls of the old palaces.

Improved Gauge Cock.



This figure is a vertical section of the Gauge Cock secured by patent to Messrs. McNab, Carr & Co., No. 133 Mercer st., this city. It is an improvement on their gauge cock illustrated on page 318 of our last volume, by referring to which our readers will perceive the distinction between them.

a s the valve spindle, with a valve forming part of it on its foot; it passes through a central opening in the hollow stem, *b*, which has a thread cut around it, matching into a thread on the case of the cock. By turning *b* round by the handle, it forces the valve on its seat, and holds it; by turning the handle to the left, the hollow stem is raised, the valve is relieved, and the water raises it up into the small chamber shown in black, and then flows out through the tube. This valve, when the stem, *b*, is raised, can be ground in its seat by simply applying a screw-driver to the top of its spindle, which is cut with a groove.

The valve is free to turn on its seat, and its spindle is free to turn in the stem when the latter is raised. There is no friction on the face of the valve, consequently it must wear a long time. The spindle, *a*, is not secured by screw at its foot to the stem, as in the figure on the page referred to; and, as a whole, this gauge cock, although it embraces the same principle as the other, is more simple and improved in its construction.

Gas Works in Great Britain.

The number of gas works in Great Britain at the present time, is stated to be seventy-six, employing, collectively, a capital equal to $62,500,000, on which an average annual dividend of 5 per cent. is paid. The number of persons employed in the manufacture is about 24,000. The quantity of gas annually produced in these works, is 10,800,000 cubic feet, requiring for its production the consumption of 1,350,000 tuns of bituminous coal. The gas is furnished to consumers at $1 per 1000 cubic feet, about one-third of the price paid in this country.

A Spitti g Snake.

A traveler in the interior of Africa, Charles H. Zeyher, gives an account, in Hooker's Journal of Botany, of a serpent which spits poison, known by the natives as *Spugg slang*, or spitting snake. This serpent is not rare, he says, in the southwestern districts of Africa. It defends itself by throwing out very caustic acid, having the odor of formic acid, which is sure to blind a person if it touches his eyes. He gives an instance of one of his dogs which was poisoned by one of these snakes, and which recovered after having been forced to swallow a great amount of new milk.

The Cooper Institute.

A bill has been introduced into the Legislature at Albany, N. Y., to enable Peter Cooper to found a scientific and literary institute in the city of New York. It allows him to convey that piece of land situated south of Astor place, between the Third and Fourth avenues, to certain trustees, for the purpose of establishing in New York an institution for the advancement of Science, Art, Philosophy and Letters—together with such scientific and historical collections, chemical and philosophical apparatus, mechanical and artistic models, books, drawings, pictures, statues, and other means of instruction as may be useful.

Literary Notices.

BLACKWOOD'S MAGAZINE.—The number for the past month—republished by Leonard Scott & Co., No. 54 Gold st., this city—has a continuation of the "Athelings,"—one of the finest works of fiction which has recently appeared.

THE ECLECTIC MAGAZINE OF FOREIGN LITERATURE—This magazine is a reprint of the ablest articles which appear in all the foreign reviews and magazines. These are selected with great care and excellent judgment by the editor and proprietor, W. H. Bidwell. The present number for January is embellished with a beautiful steel plate likeness of that great and good man, Dr. Chalmers; also a likeness of the young Emperor of Russia. This is the commencement of a new volume—a good time to subscribe. It is, perhaps, the most useful literary magazine in the English language. Published at No. 5 Beekman st., this city.

THE FARM JOURNAL.—This agricultural monthly, edited by David A. Wells, A. M., and A. A. Spangler, published by Samuel Emlen & Co., Market street, Philadelphia, commences with its January number a new volume. It comes to us in a new dress, and laden with excellent matter for the farmer. It is edited with evident ability and spirit, and is truly what it purports to be, "the progressive farmer." Now is an excellent time to subscribe.

THE PLOW LOOM AND ANVIL.—This magazine, devoted to agriculture and the kindred arts, is now the property of N. A. Nash and M. P. Parish, editors and publishers, No. 7 Beekman street, this city. Professor Nash has been long known as an able agricultural writer, well versed in the science, and his experience at home and abroad in agricultural matters is very extensive.

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